UNITED NATIONS
Office on Drugs and Crime

2005
WORLD DRUG REPORT

Volume 1: Analysis

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2005

WORLD DRUG REPORT

Volume 1: Analysis

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Contents

Volume I. Analysis

Preface 1

Explanatory notes 3

Executive Summary 5

CHAPTER 1: TRENDS IN WORLD DRUG MARKETS

1.1 The dynamics of the world drug market 23
1.1.1 How is the drug problem evolving? 23
1.1.2 The outlook for world drug markets 35
1.2 Opium / Heroin market
1.2.1 Production 39
1.2.2 Trafficking 48
1.2.3 Abuse 56
1.3 Coca / Cocaine market
1.3.1 Production 61
1.3.2 Trafficking 70
1.3.3 Abuse 76
1.4 Cannabis market
1.4.1 Production 81
1.4.2 Trafficking 84
1.4.3 Abuse 93
1.5 Amphetamine-type stimulants market
1.5.1 Production 99
1.5.2 Trafficking 103
1.5.3 Abuse 112

CHAPTER 2: ESTIMATING THE VALUE OF ILLICIT DRUG MARKETS

2.1. Background 123
2.2 Results 127
2.3 Results of the individual markets 130
2.4 Conclusions 143

CHAPTER 3: HIV/AIDS AND DRUGS 147

3.1 Epidemiology of HIV/AIDS and drug use 148
3.2 Drug use, sexual behaviours and HIV/AIDS 155
3.3 Conclusions 162

CHAPTER 4: TOWARDS THE CREATION OF AN ILLICIT DRUG INDEX

4.1 Introduction 165
4.2 Methodology 167

Volume II. Statistics

CHAPTER 5: PRODUCTION

5.1 Opium / Heroin
- 5.1.1 Afghanistan
- 5.1.2 Myanmar
- 5.1.3 Lao PDR
- 5.1.4 Seizures of illicit laboratories

5.2 Coca / Cocaine
- 5.2.1 Colombia
- 5.2.2 Peru
- 5.2.3 Bolivia
- 5.2.4 Seizures of illicit laboratories

5.3 Cannabis
- 5.3.1 Morocco
- 5.3.2 Seizures of illicit laboratories

5.4 Amphetamine-type stimulants
- 5.4.1 Seizures of illicit laboratories

5.5 Other drugs
- 5.5.1 Seizures of illicit laboratories

CHAPTER 6: SEIZURES

6.1 Opiates: Seizures, 1998-2003
6.2 Cocaine: Seizures, 1998-2003
6.3 Cannabis: Seizures, 1998-2003
6.4 Amphetamine-type stimulants: Seizures, 1998-2003

CHAPTER 7: PRICES

7.1 Opiates: Wholesale, street prices and purity levels
7.2 Cocaine: Wholesale, street prices and purity levels
7.3 Cannabis: Wholesale, street prices and purity levels
7.4 Amphetamine-type stimulants: Wholesale, street prices and purity levels

CHAPTER 8: CONSUMPTION

8.1 Annual prevalence of drug abuse
- 8.1.1 Opiates
- 8.1.2 Cocaine
- 8.1.3 Cannabis
- 8.1.4 Amphetamine-type stimulants
- 8.1.5 Ecstasy

8.2 Treatment demand (primary drugs of abuse)

Methodology

Preface

Last year the United Nations Office on Drugs and Crime (UNODC) merged its former *Global Illict Drug Trends* series with the *World Drug Report*, issued it in two volumes comprising Analysis and Statistics, and decided to make it an annual publication. Feedback on the new format and frequency has been positive. There is also continuing evidence that the world needs such annual assessments from the United Nations. They help the international community to judge where it is, how it is performing, and whether it is reaching the targets it sets for itself. Particularly in areas as globally inter-connected as drugs and crime, such assessments also help individual countries - the building blocks of the international community - to steer their own ways forward.

The *World Drug Report* 2005 includes an overview of our work in two new areas of research. Both aim to provide tools to enrich our understanding of an immensely complex situation: an estimate of the financial value of the world drug market, and the preliminary steps towards the creation of an Illicit Drug Index. Now that we are able to systematically analyse trends which tell us where we are and which could tell us where we are going - we work towards defining another equally important piece of the puzzle: the baseline from which to measure progress.

Production and trafficking of illicit drugs is driven substantially, if not exclusively, by economic motives. Understanding the scale of the finances involved can be of great use to those working in the field. Who earns the most in the global illicit drug business? How does the size of this market compare with legitimate enterprises? Which substances and markets are the most profitable? How are the monetary incentives changing over time? Which sectors of the market are most vulnerable to economic sanctions? This *World Drug Report* takes a further step towards providing policy relevant answers to such questions.

The Index is a single value used to summarise the drug situation in a particular location at a given point in time. The creation of an index is an exercise fraught with controversy, because there is no objective way of deciding on the weight assigned to each of the variables included. While it is bound to generate debate which will inform its refinement and adaptation, the Index is introduced this year because there is a need to provide a substantiated answers to the most basic questions in our collective struggle with drugs: is the situation getting better or worse? Are we winning or are we losing? Can we get beyond the problem, so well known in this field, of using the same data to arrive at diametrically opposed conclusions? If production of a particular drug goes down in a certain area, but abuse of the same drug goes up in the same area, is this to interpreted as success, failure or stagnation? A single index, provided we can agree on one, will go a long way towards answering these kinds of questions.

It is precisely because the international community has resolved to be the winner of the struggle against illicit drugs and for enhanced human security that we need to know more about where we stand and explore all possible means of measurement and comparison. This will help our assessment in 2008, when we will have to judge how we, as an international community, have done over the decade in meeting the goals and commitments made at the 1998 Special Sesion of the General Assembly (UNGASS).

On a very practical level, we need information of the sort provided by these two new tools in order to steer our efforts and interventions. For far too long the illicit drug market as been able to operate and hide in obscurity. It has taken much work and dedication, across the world, to shed light on this pernicious market. The goal of the information presented in the *World Drug Report* has always been to make that light shine brighter.

The global retail market for illicit drugs is estimated at US$320bn. For all the caveats that one may put on such a figure, and the text notes them, it is still larger than the individual GDPs of nearly 90% of the countries of the world. This is not a small enemy against which we struggle. It is a monster. With such an enormous amount of capital at its disposal, it is bound to be an extremely tenacious one. We know that there are few dimensions of human security that are not affected in some way by the illicit drug market. Let us continue then, armed with new knowledge and light, to fight, in both word and deed, for those whose very existence is threatened by this trade.

Antonio Maria Costa
Executive Director
United Nations *Office on Drugs and Crime*

Explanatory notes

This report has been reproduced without formal editing.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The names of territories and administrative areas are in italics.

In various sections, this report refers to a number of regional designations. These are not official designations. They are defined as follows: West and Central Europe: EU 25 plus EFTA plus San Marino and Andorra; East Europe: European CIS countries; Southeast Europe: Turkey and the non-EU Balkan countries; North America: Canada, Mexico and USA.

The following abbreviations have been used in this report:

ARQ	Annual reports questionnaire
ATS	Amphetamine-type stimulants. Amphetamines (amphetamine, methamphetamine and related substances) and substances of the ecstasy group (ecstasy, MDMA, MDEA, MDA etc.)
CICAD	Inter-American Drug Abuse Control Commission
CIS	Commonwealth of Independent States
DEA	Drug Enforcement Administration (United States of America)
DELTA	UNODC Database for Estimates and Long-term Trends Analysis
DUMA	Drug Use Monitoring in Australia
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
ESPAD	European School Survey Project on Alcohol and other Drugs (Council of Europe)
F.O.	UNODC Field Office
ICMP	UNODC Global Illicit Crop Monitoring Programme
IDU	Injecting drug use
INCB	International Narcotics Control Board
INCSR	International Narcotics Control Strategy Report (United States of America)
Interpol/ICPO	International Criminal Police Organization
LSD	lysergic acid diethylamide
NAPOL	National Police
PCP	phencyclidine
UNAIDS	Joint and Co-sponsored United Nations Programme on Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
WADAT	Weighted Analysis on Drug Abuse Trends, referred to as Drug Abuse Trend Index in this report.
WCO	World Customs Organization
WHO	World Health Organization
Govt.	Government
bn	Billion
ha	Hectare
kg	Kilogram
lt.	Litre
mn	Million
mt	Metric ton
u.	Unit

Executive Summary

Chapter 1: Trends in World Drug Markets

1.1. The Dynamics of the World Drug Market

1.1.1 How is the drug problem evolving?

What is the level of drug use in the world, and how is it changing?

Some 200 million people, or 5% of the world's population age 15-64, have used drugs at least once in the last 12 months. This is 15 million people higher than last year's estimate but remains significantly lower than the number of persons using licit psychoactive substances (about 30% of the general adult population use tobacco and about half use alcohol). The number of cannabis users worldwide is now close to 160 million people or 4% of the population age 15-64. Estimates of the number of ATS users - 26 million people using amphetamines and 8 million using ecstasy - are slightly lower than those of last year's *World Drug Report* (WDR), reflecting declines of methamphetamine use in South-East Asia (notably Thailand) and of ecstasy use in North America (notably in the USA). The number of opiate users is estimated to have risen slightly to around 16 million people (11 million of which abuse heroin), mainly reflecting increasing levels of opiate abuse in Asia. No significant changes were observed in most other parts of the world. The number of cocaine users – close to 14 million people – rose slightly.

Unsurprisingly, the main problem drugs at the global level continue to be the opiates (notably heroin) followed by cocaine. For most of Europe and Asia, opiates continued to be the main problem drug, accounting for 62% of all treatment demand in 2003. In South-America, drug related treatment demand continued to be mainly linked to the abuse of cocaine (59% of all treatment demand). In Africa, the bulk of all treatment demand – as in the past – is linked to cannabis (64%).

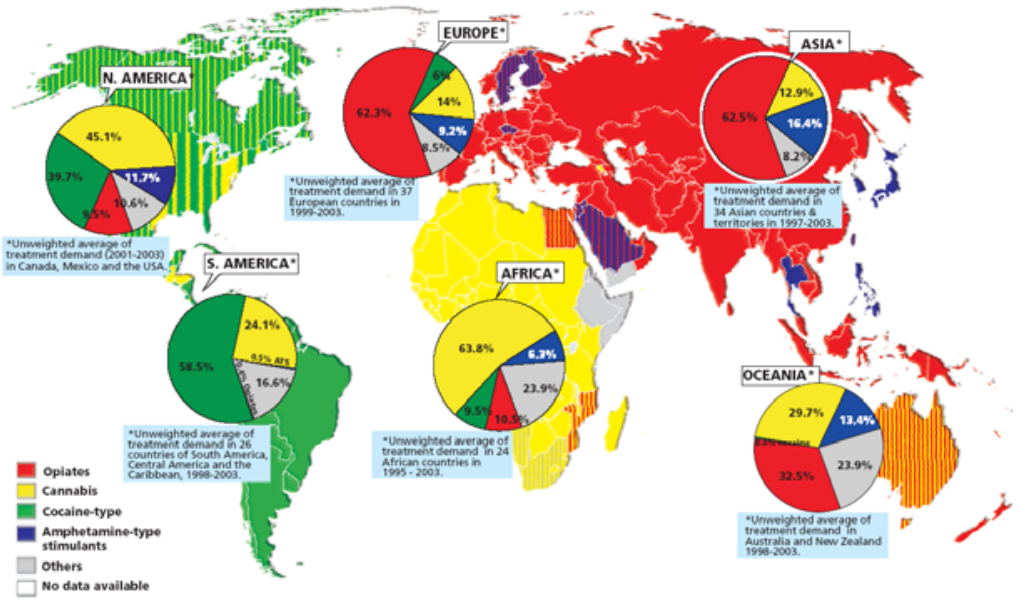
Extent of drug use (annual prevalence*) estimates 2003/04 (or latest year available)

	All illicit drugs	Cannabis	Amphetamine-type stimulants		Cocaine	Opiates	of which heroin
			Amphetamines	Ecstasy			
(million people)	**200**	**160.9**	**26.2**	**7.9**	**13.7**	**15.9**	**10.6**
in % of global population age 15-64	5.0%	4.0%	0.6%	0.2%	0.3%	0.4%	0.23%

Annual prevalence is a measure of the number/percentage of people who have consumed an illicit drug at least once in the 12 month-period preceding the assessment.

Sources: UNODC, Annual Reports Questionnaire data, National Reports, UNODC estimates.

Main problem drugs (as reflected in treatment demand) in 2003 (or latest year available)

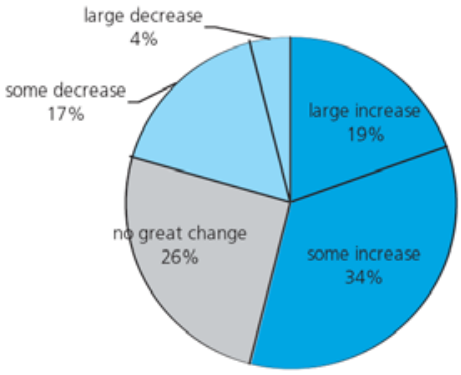


There have also been some important shifts in established patterns in recent years:

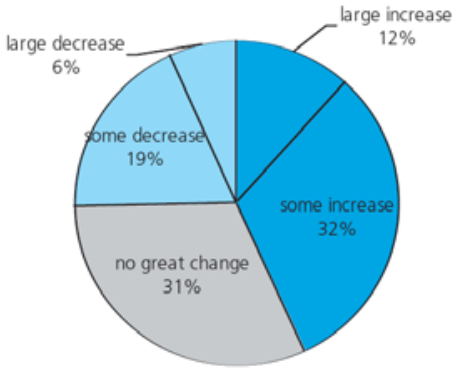
- *cannabis* in treatment demand in North America, Oceania, Europe, Africa and South-America has increased since the late 1990s;
- *cocaine* has declined in overall drug treatment demand in North America and is rising in Europe;
- *opiates* have declined in overall treatment demand in the Oceania region, a late consequence of Australia's heroin shortage in 2001; and
- *ATS* in treatment demand has increased in Asia, Europe, North America and Africa.

Member States provide UNODC with their perceptions of the development of the drug situation in their countries on a five-point scale (large increase, some increase, no great change, some decrease, large decrease). The statistical

Global drug use trends in 2000 (based on information from 96 countries)

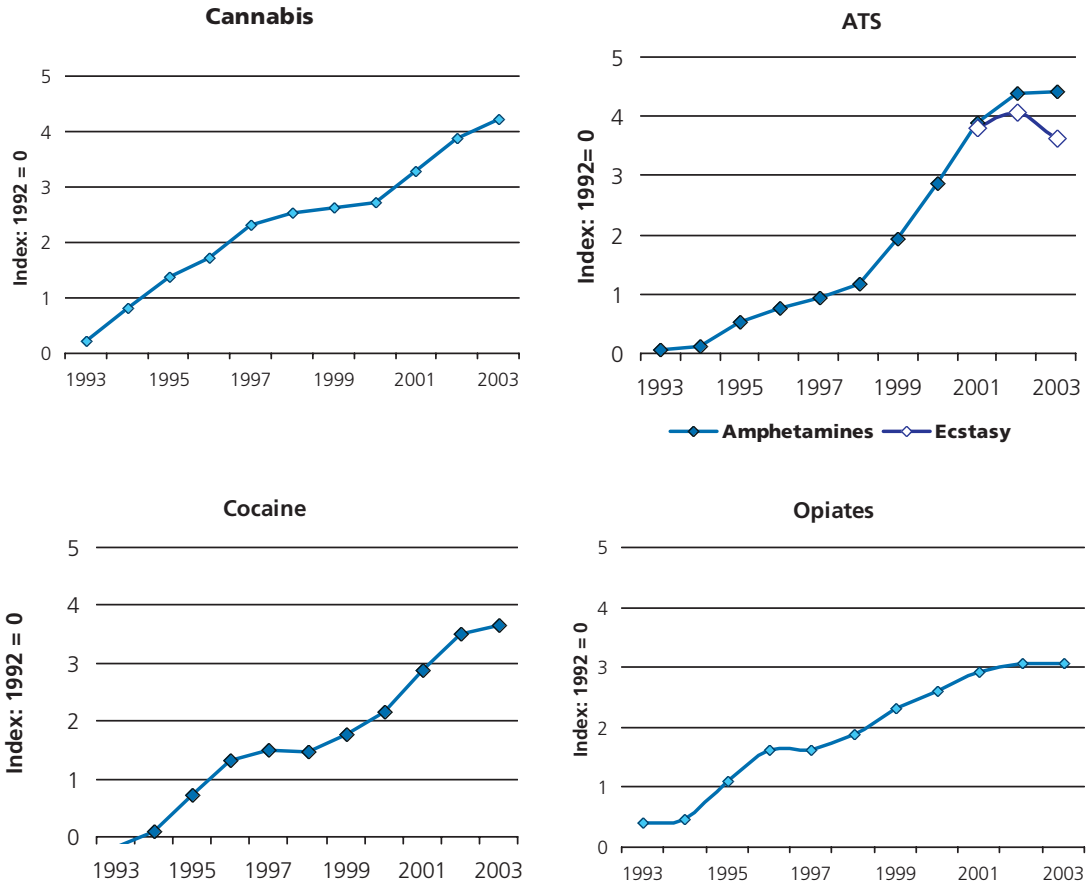


Global drug use trends in 2003 (based on information from 102 countries)



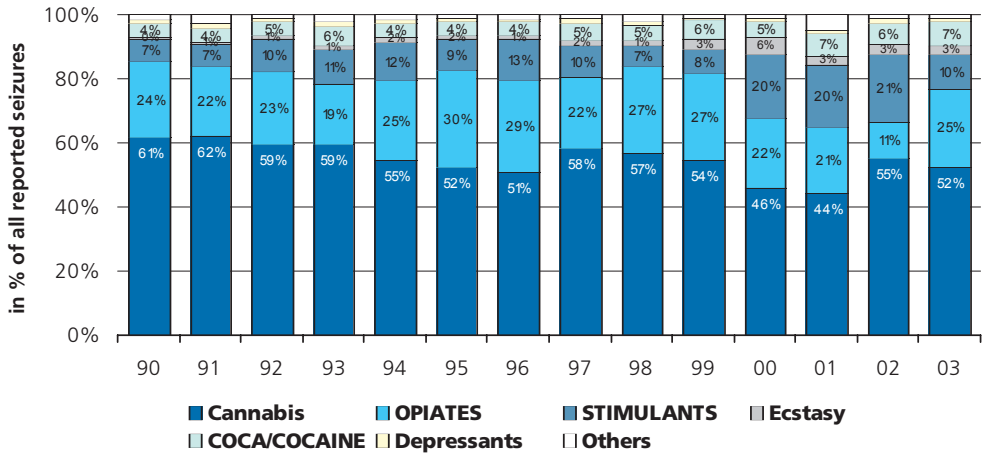
analysis of these responses suggests that overall drug consumption continues to spread at the global level. Although countries indicating rising levels of drug consumption continue to outnumber those with falling levels of drug use, the proportions have shifted in recent years in a slightly more positive direction. While in 2000 53% of all reporting countries saw rising levels of drug use, the corresponding proportion fell to 44% in 2003. In parallel, the proportion of countries seeing declines rose from 21% in 2000 to 25% in 2003.

Drug Use Trend Index (based on expert opinion: weighted by estimated number of users)



For the main drug categories, specific drug use trend indices were established. The indicies are based on the trends reported by the competent authorities and partially weighted by the size of the countries' drug using population. This procedure gives a greater weight to countries with a larger drug using population, thus more accurately reflecting the overall trend at the global level. The methodological details are described in the methodology section. In 2003, these indices show (1) an ongoing increase in the use of cannabis, (2) some signs of stabilization for opiates and cocaine and (3) a stabilization/decline for ATS. Over the last decade, ATS, followed by cannabis, experienced the strongest increases.

Proportion of seizure cases according to drug category, 1990-2003



A total of 95 countries reported the number of drug seizures made to UNODC in 2003. Between 1985 and 2003, the number of seizures increased four fold. In the last few years, with the exception of a dip in 2002, the number of seizures seems to have plateaued at about 1.3 million cases. More than half of these were cannabis seizures, about a quarter involved opiates; amphetamines were seized in 10% of the cases, and cocaine in 7%.

In the last decade, the most significant trend has been the increase in the number of seizures of amphetamine-type stimulants (ATS). In 2003, however, this trend reversed sharply, mainly as a result of the decline in ATS seizures from Thailand following a major crackdown on the drugs in the previous year. It is also estimated that ATS consumption dropped globally in the last year, so the reduction in seizures is probably more than just an artefact of changing enforcement patterns.

In contrast, the proportion of opiates seizures rose significantly in 2003, mainly reflecting the revival of Afghan opium production and more seizures in the countries surrounding Afghanistan. The number of cannabis cases has been on the rise since the early 1990s, and its rate of growth exceeded that of other drugs in 2002-2003, in line with a growth in global consumption. Cocaine has remained relatively stable.

The global production trend is rather stable for opium, declining for coca but seems to be increasing for cannabis as well as, following some declines, for ATS. Currently about 196,000 ha are under opium poppy and 158,000 ha are under coca cultivation worldwide.

Following strong increases in 1980s, opium production has been basically stable at around 4,000 – 5,000 metric tons since the early 1990s. Production stood at 4,765 and 4,850 metric tons in 2003 and 2004 respectively.[1] About 87% of opium for the illicit market is now produced in Afghanistan. The long-term trend has been towards rising levels of opium production in Afghanistan. This has largely offset the strong declines reported from Myanmar and Lao PDR in recent years, bringing global potential heroin production in 2004 to 565 metric tons.

1 These figures represent potential rather than actual heroin or cocaine production. Potential production refers to the amount of heroin or cocaine produced if all of the raw material (opium/coca leaf) produced in a country were transformed into the end product. Actual heroin/cocaine production of a country may well differ. It would be lower if not all of the raw material were transformed into the end-products (e.g. as there is local consumption of the raw material) or it could be higher if raw material was imported from a neighbouring country, or if the manufacturing processes improved.

Potential cocaine production peaked in the second half of the 1990s (950 mt in 1996 and 925 mt in 1999), but has been declining significantly thereafter to 674 mt in 2003. In 2004, cocaine production increased marginally to 687 metric tons. Despite this, overall production remains 26% lower than in 1999. The declines of potential cocaine production in recent years were mainly the result of progress made in Colombia. The increase in 2004 was due to stronger coca leaf production in both Peru and Bolivia. Both countries had already made significant progress in cutting coca leaf production a few years earlier, however, and production is thus still lower than in 1998 or previous years.

More than 7,000 mt of cannabis resin and slightly more than 40,000 mt of cannabis herb were produced in 2003, exceeding last year's published estimate of an annual production of around 32,000 mt of cannabis herb. A global total of 332 mt of amphetamines (methamphetamine and amphetamine) and 90 mt of ecstasy were produced in 2003.

1.1.2 The outlook for world drug markets

Afghanistan will determine the size and development of the world's main opiate markets. As compared to last year, the situation looks slightly more positive for Afghanistan. Presidential elections were held in 2004 and the government is gradually strengthening its control over the country and those involved in the opium business. A Rapid Assessment conducted by UNODC earlier in 2005 indicated that the area under poppy cultivation has declined in 2005 as compared to the record levels in 2004. It is, however, not yet certain whether the reduction of the land under opium poppy cultivation would be sufficient to offset a possibly higher yield than observed in 2004.

In the meantime, the country's last opium harvest is still finding its way to the consumer markets of Europe and other regions. Purity levels of heroin in some European countries have already started to rise – a clear indication that there is sufficient and rising supply. Thus, while the mid-term prospects are rather positive, problems could still emerge in some of the main consumer markets this year.

Opium production in South-East Asia is now 78% lower than it was in 1996. Production in this sub-region is forecast to decline further in 2005. If the declines witnessed over the last few years are sustained, it would not be too far outside the realm of possibility that South-East Asia could become virtually free of illicit cultivation over the next few years.

The trend towards lower production of cocaine did not continue in 2004, as the area under coca cultivation rose in both Bolivia and Peru. This is a worrying loss of momentum for both countries, which had already made significant progress to curb coca production. The net results (+2%) were not a real problem in 2004. However, ongoing increases in these two countries could eventually weaken the progress the region has made in controlling coca supply. This is a vital juncture, and it will be important for the international community to continue to support alternative livelihoods programmes.

In parallel, the risk of a further dispersion of the cocaine markets continues. Europe is particularly vulnerable, having already seen a steady growth of its cocaine markets over the last decade. Even though there are signs of stabilization in some countries, consumption continues to increase in others. In 2003, 14 European countries reported an increase and 10 a stabilization. Not a single country experienced a decline in cocaine use. A particular challenge will be controlling the spread of crack-cocaine: 7 European countries reported an increase, 9 saw stable levels while, again, not a single European country identified a decline in 2003.

Cannabis continues to be the most widely produced, trafficked and consumed drug worldwide. All indicators – production, seizures and consumption - suggest that the market at the global level is expanding further. For the time being, there is no reason to believe that this expansion will stop.

Signals from the ATS market are complex. Although there are clear indications that the strong increases in ATS use observed in the 1990s were not continued into the first years of the new millennium, future increases cannot be discounted.

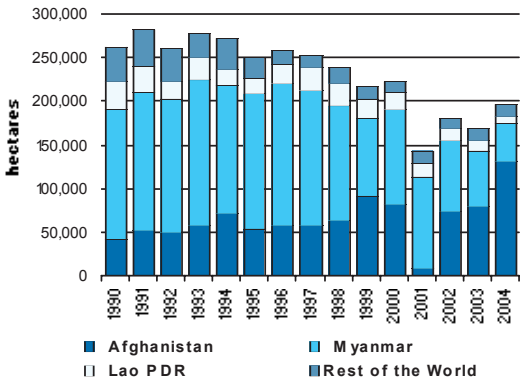
1.2 Opium/Heroin Market

1.2.1 Production

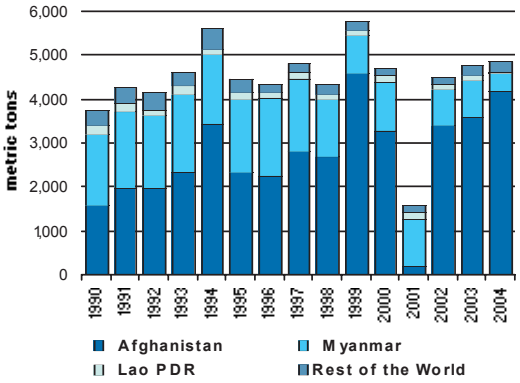
There are two distinct factors to keep in mind with regard to global production of opiates: the land area dedicated to growing opium poppy and the rate at which this crop is converted into drugs. While the total land area used for poppy cultivation increased in 2003, yields were small due to adverse climatic factors, and thus total production remained much the same as it has been since the early 1990s: about 4850 metric tons of opium in 2004, with the potential to produce about 565 mt of heroin.

The increase in land dedicated to opium cultivation was located almost entirely in Afghanistan, where an unprecedented 131,000 ha were under the crop, grown in all 34 provinces of the country. Fortunately, in the world's other major heroin producing region - Southeast Asia - cultivation has been in decline since 1998. In 2004, the area dedicated to poppy in Myanmar declined 23%, and in Lao PDR cultivation was down 43%. But these dramatic reductions were not enough to offset the increase in Afghanistan, resulting in a net increase in global cultivation area of 16% over the previous year. Bad weather negatively impacted yields in both major production areas, however, so total opium production only increased by about 2% over the previous year.

Global opium poppy cultivation 1990-2004 (ha)



Global opium production 1990-2004 (metric tons)

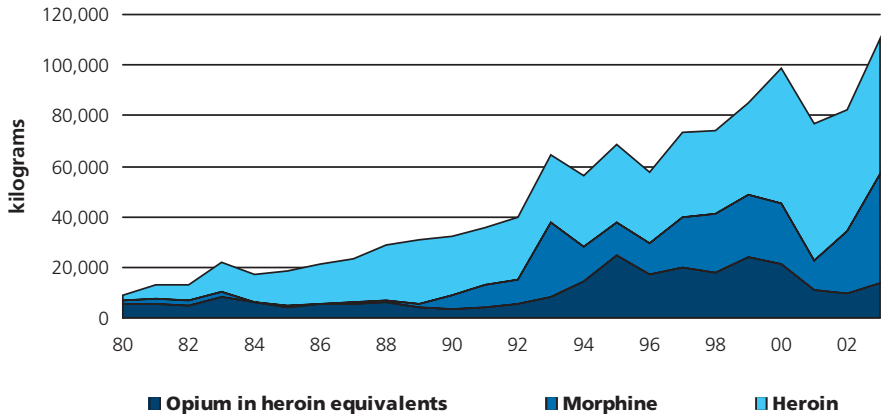


Not surprisingly, prices were inversely proportional to supplies, and Afghan opium farmers saw the value of their produce drop by 69% as compared to the previous year, to US$92/kg of fresh opium. However, this is still two to three times higher than in the second half of the 1990s. In contrast, Southeast Asian poppy growers commanded higher prices: in Myanmar, US$ 234/kg, an increase of 80%, and in Laos, US$ 218/kg, an increase of 27% over 2003.

1.2.2 Trafficking

Opiate seizures increased by a third in 2003 to achieve a record high of 110 metric tons. Comparing this figure to production estimates, it now appears that law enforcement is intercepting nearly a quarter of all the opiates produced. The most pronounced increase was in the countries immediately bordering Afghanistan, particularly Pakistan (34.7 mt) and the Islamic Republic of Iran (26.1 mt). This is reflected in the large share of seizures that were semi-processed products (opium or morphine, rather than heroin). In Europe, seizures declined by 13% to 19.4 mt in 2003.

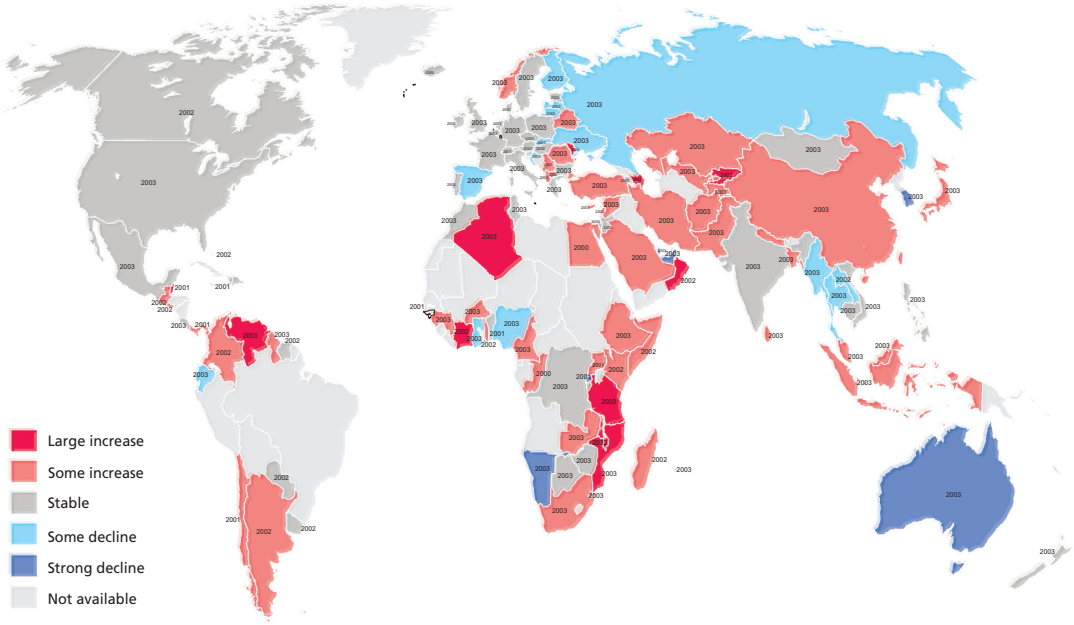
Seizures of opiates (in heroin equivalents), 1980-2003



1.2.3 Abuse

A total of 16 million people worldwide use opiates, including some 10.6 million people who abuse heroin. More people (1.3 million) are treated for opiates abuse than for any other substance. Over 60% of treatment demand in Europe and in Asia is related to the abuse of opiates. In 2003, use levels remained stable globally, but some increases could be related to Afghan production going up.

Changes in abuse of heroin and other opiates, 2003 (or latest year available)

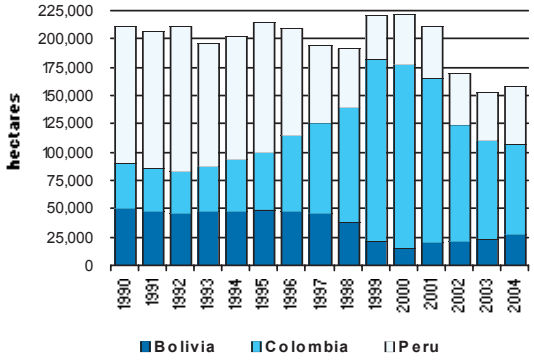


1.3 Coca/Cocaine Market

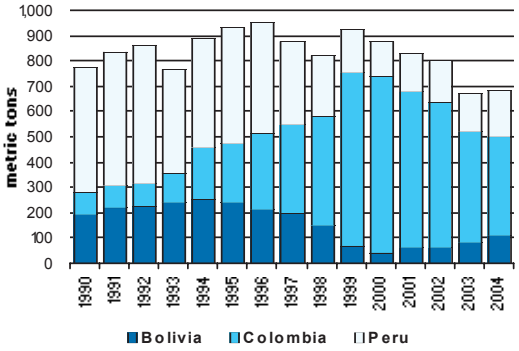
1.3.1 Production

Most of the world's cocaine is produced in the just three countries: Columbia (50%), Peru (32%), and Bolivia (15%). In 2004, coca cultivation in Columbia decreased by 6000 ha, but this was more than offset by increases in Peru (up 14%) and Bolivia (up 17%). This resulted in a year-on-year global increase of about 3%, but that is still 29% less than the peak production year of 2000. The sustained high price for coca leaf was the likely motivation for farmers in Peru and Bolivia to increase coca cultivation in 2004. Prices for coca leaf have doubled since the mid-1990s in Peru, commanding US$ 2/kg, and in Bolivia the price was even higher, at US$ 5/kg.

Global coca bush cultivation 1990-2004 (ha)



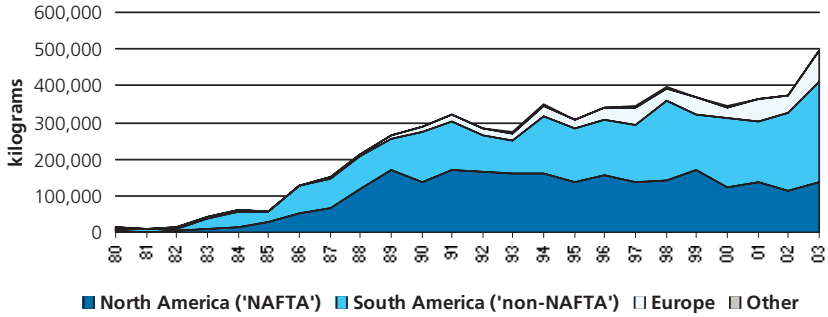
Global cocaine production 1990-2004 (metric tons)



1.3.2 Trafficking

Global cocaine seizures increased by a third in 2003, to a record high of 495 mt, more than half of which were made in South America. Based on production estimates and taking purity into account, this represents an interception rate of 44%, also a record high. Columbia alone seized 146 mt, or 29% of global seizures. Oddly, rather than forcing prices up, prices dropped slightly in most of the major markets for the drug. It would appear that North American cocaine markets are in decline and that European ones are on the rise. Most of the cocaine smuggled into the United States transits Mexico or the Caribbean. Europe's supply is increasingly transiting Africa, in addition to traditional routes via Spain and the Netherlands.

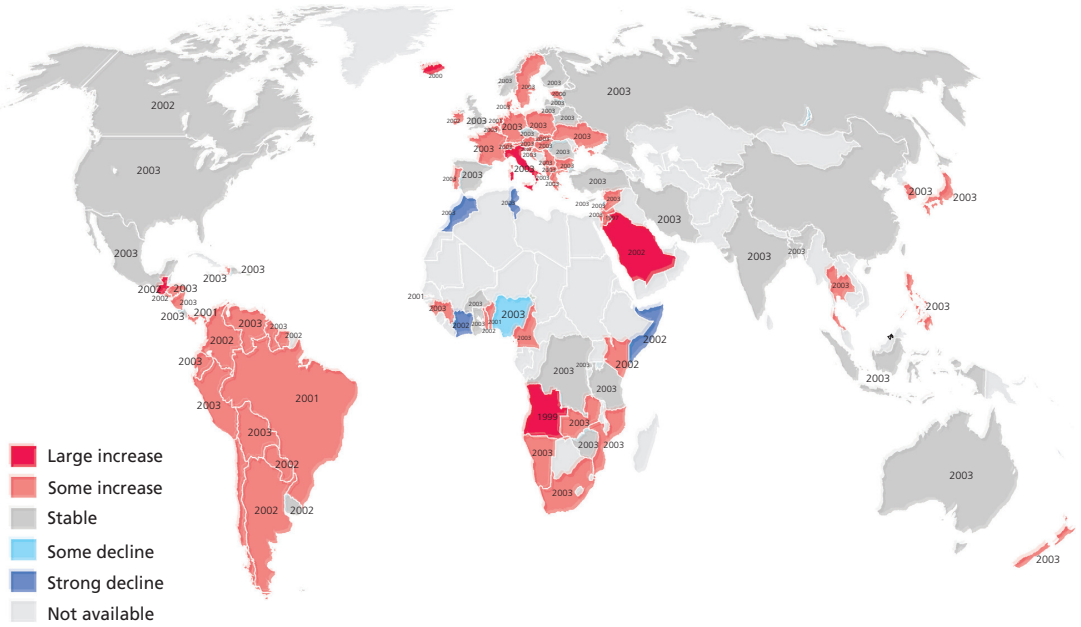
Seizures of cocaine (base and HCL), 1980-2003



1.3.3 Abuse

There are an estimated 14 million cocaine users worldwide, with two-thirds residing in the Americas. Globally, cocaine use seems to have stabilised, after years of strong increases, although school surveys suggest a rising trend in Western Europe.

Changes in abuse of cocaine, 2003 (or latest year available)



1.4 Cannabis Market

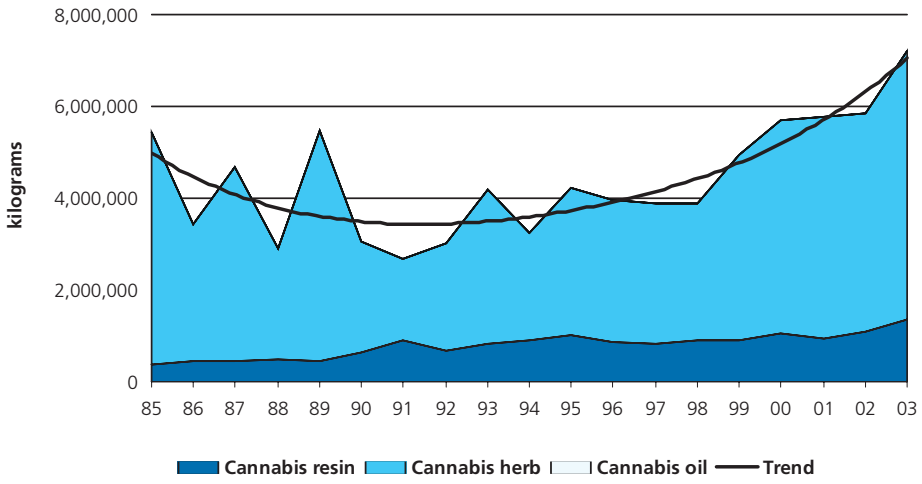
1.4.1 Production

Cannabis production has been rising and may have exceeded 40,000 mt in 2003. The production of herbal cannabis is extremely dispersed, and most Member States report some cannabis cultivation in their countries. Production of cannabis resin (hashish) on the other hand, seems to be concentrated in Morocco, which supplies 80% of the resin consumed in Europe, the world's largest resin market. The land dedicated to cannabis cultivation in Morocco declined between 2003 and 2004 by 10%. Pakistan and Afghanistan also contribute resin to the international market, for a total global production of about 7000 mt.

1.4.2 Trafficking

Cannabis herb is the most widely trafficked drug, and seizures rose again in 2003, to 5,845 mt, 58% of which occurred in North America, with Africa providing another 26%. Cannabis resin seizures also increased to a new all time high in 2003 - 1,361 mt - 70% of which was seized in Western Europe.

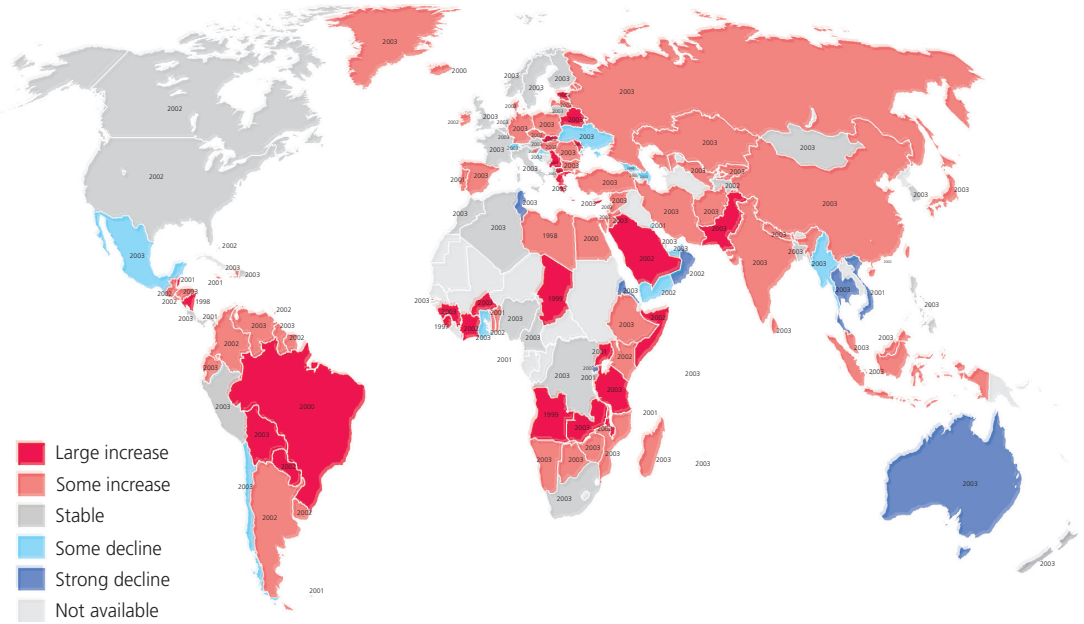
Cannabis seizures, 1985-2003



1.4.3 Abuse

Cannabis is far and away the most commonly consumed street drug in the world. An estimated 161 million people used cannabis in 2003, equivalent to 4% of the global population between the ages 15 and 64. According to expert opinions solicited from Member States, far more countries felt that cannabis use was increasing (46% of 101 countries responding) than declining (16%) in 2003. Use among students appears to be on the increase in Europe, though not in the United States or Australia.

Changes in abuse of cannabis, 2003 (or latest year available)



1.5 Amphetamine-type Stimulants Market

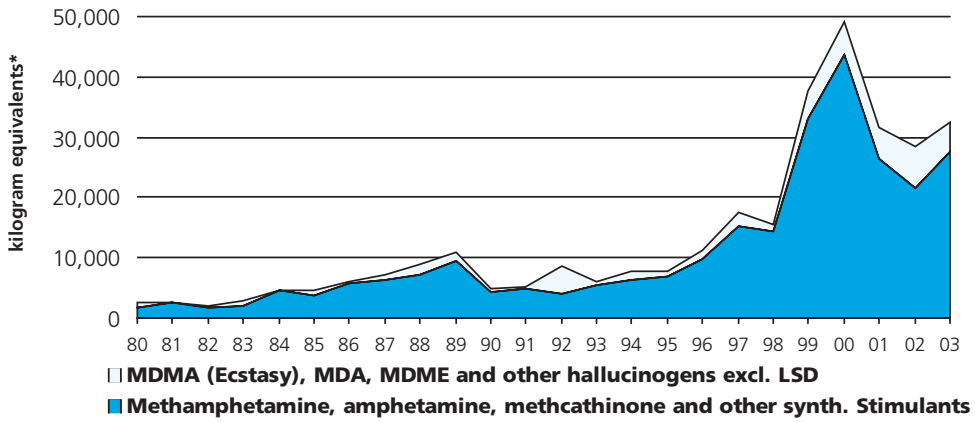
1.5.1 Production

Global ATS production is currently above 400 mt, three quarters of which is either methamphetamine or amphetamine and one quarter of which is 'ecstasy'. Production of amphetamines is concentrated in Europe; methamphetamine in China, Myanmar, the Philippines, and North America; and ecstasy in the Netherlands and Belgium.

1.5.2 Trafficking

After some years of decline, ATS seizures increased in 2003, with the largest volumes seized in Thailand (20% of the total), followed by China (18%), the United States (14%), the Philippines (10%), and the UK, the Netherlands and Australia (6% each). Methamphetamine seizures increased by 40% in 2003 though they are still 40% less than the peak year of 2000. The largest seizures of methamphetamine in 2003 were reported by Thailand (6.5 mt), China (5.8 mt), the United States (3.9 mt) and the Philippines (3.1 mt). Global amphetamine seizures (5.4 mt) are back to the levels reported in 1997/98, having increased by 22% in 2003. Amphetamine seizures continue to be concentrated in Europe (>90%), notably in West and Central Europe (79%). Ecstasy seizures in kilogram equivalents amounted to 4.3 mt, 37% less than in the peak year of 2002, and were made mainly in West and Central Europe (54%) and Oceania (26%).

Seizures of amphetamine-type stimulants 1980-2003

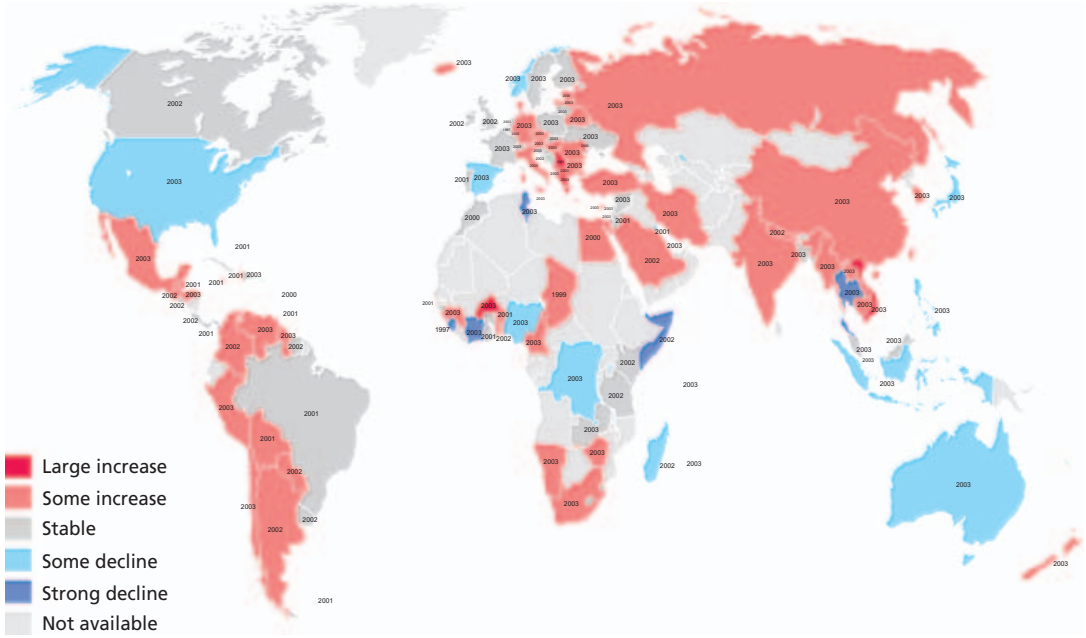


* Seizures reported in kilograms and in units; a unit ('pill') of ecstasy was assumed to contain on average 100 mg of MDMA; a 'unit' of amphetamine / methamphetamine was assumed to contain 30 mg of amphetamine / methamphetamine.

1.5.3 Abuse

An estimated 26 million people used methamphetamine, amphetamine, or related substances in 2003, while about 7.9 million people used ecstasy. After the opiates, ATS are the main problem drugs in Asia, and in some countries they have overtaken heroin in terms of their contribution to treatment demand. Almost two thirds of the world's amphetamine and methamphetamine users reside in Asia, most of whom are methamphetamine users in East and South-East Asia. Prevalence of ecstasy use is highest in the Oceania region (3.1%), followed by West and Central Europe (0.9%) and North America (0.8%).

Changes in consumption of amphetamines, 2003 (or latest year available)



Chapter 2: Estimating the value of illicit drug markets

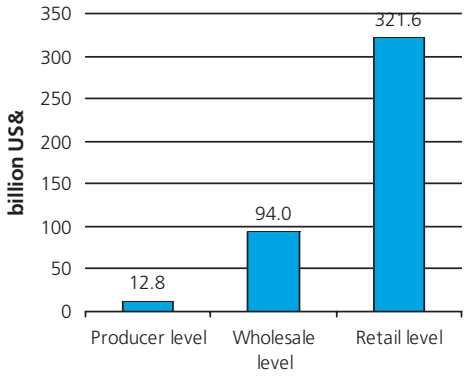
The illicit drug industry operates outside the law. Its 'companies' are not listed on the stock exchange, they are not valued by any private accounting firm, and the dynamics of the drug industry are not regularly pored over by analysts, economists and forecasters. Yet the overall size of the illicit drug industry is known to be huge.

The obscurity of the global illicit drug market makes the exercise of estimating its size extremely difficult. This is not because the drug market does not behave like most others in terms of supply and demand - there is a growing acceptance that it does. It is rather because the most basic inputs which are needed for such an estimation – data on production, prices, quantities exported, imported and consumed – are themselves often estimates and are frequently based on less than complete data.

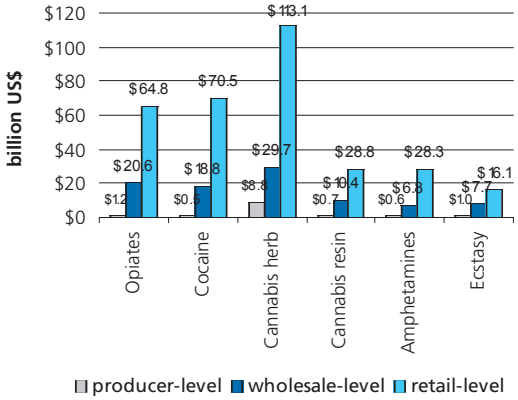
This year UNODC presents an estimate of the value of the illicit market. Three guiding principles were applied to this exercise: first, only readily available data were used; second, the methodology and the model were kept straightforward and the assumptions transparent; and third, it was ensured that the model, by distilling the market down to its most basic economic rules, would be easily updateable. In addition, the methodology chosen tries to combine, as far as possible, the top-down with the bottom-up approach.

The value of the global illicit drug market for the year 2003 was estimated at US$13 bn at the production level, $94 bn at the wholesale level (taking seizures into account), and US$322 bn at the retail level (based on retail prices and taking seizures and other losses into account).

Size of the global illicit drug market in 2003



Size of the global illicit drug market in 2003 by substances

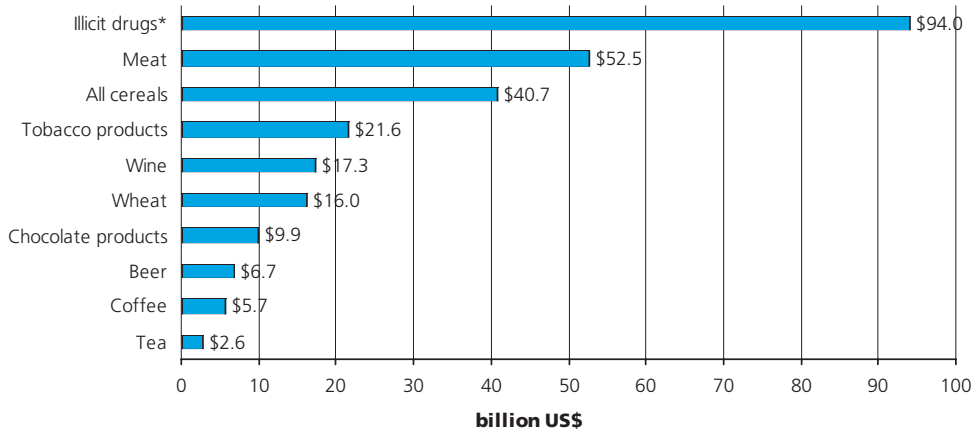


The size of the global illicit drug market is substantial. The value, measured at retail prices, is higher than the GDP of 88% of the countries in the world (163 out of 184 for which the World Bank has GDP data) and equivalent to about three quarters of Sub-Saharan Africa's total GDP (US$439 bn in 2003). The sale of drugs, measured at wholesale prices, was equivalent to 12% of global export of chemicals (US$794 bn), 14% of global agricultural exports (US$674 bn) and exceeded global exports of ores and other minerals (US$79 bn) in 2003. Such sales of drugs were also higher than the combined total licit agricultural exports from Latin America (US$75 bn) and the Middle East (US$10 bn) in 2003[2].

The largest market, according to these estimates, is cannabis herb (with a retail market size of $113 bn), followed by cocaine (US$71 bn), the opiates (US$65 bn) and cannabis resin (US$29 bn). The ATS markets together (methamphetamine, amphetamine and ecstasy) amount to US$44 bn. The valuation does not take into account the value of other drugs.

While UNODC is reasonably confident with its estimations on opiates, cocaine and the ATS, the degree of certainty is far lower for cannabis, notably for cannabis herb, as information for production and consumption of this substance is highly contradictory. If better information becomes available, a major revision cannot be ruled out.

Value of Illicit drugs at wholesale level (in billion US$) compared to the export values of selected agricultural commodities in 2003



* illicit drugs measured at the wholesale level, used as a proxy for the export price.

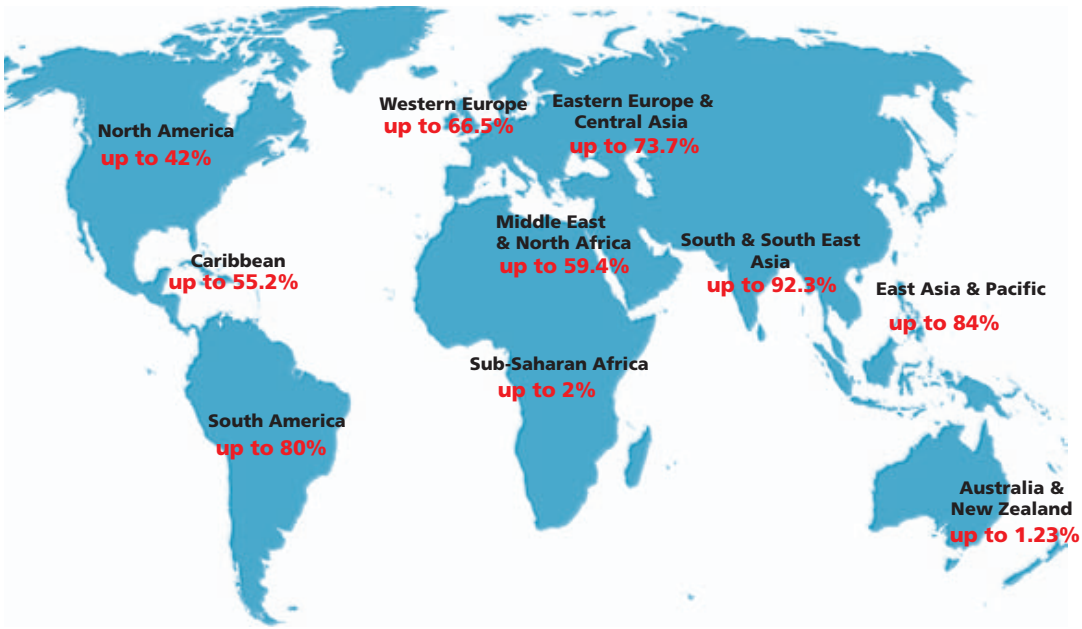
2 World Bank, World Development Indicators database, April 2005.

Chapter 3: HIV/AIDS and Drugs

Globally, sexual transmission of HIV continues to be the most common way the virus is spread, but drug use is contributing to the pandemic in at least four ways. First, the most common and best-researched method of transmission is via the use of contaminated injection equipment between people who inject drugs. Second, there is sexual transmission of the virus between those who inject drugs and their sexual partners. The dual transmission risk in the case of sex workers who also inject drugs leads to epidemics that expand quickly and act as a bridge to the rest of the population. Third, non-injecting use of drugs such as cocaine and amphetamine-type stimulants leads to high-risk sexual behaviour. And finally, HIV can be transmitted from an infected mother to her child.

In the early stages of the pandemic, HIV/AIDS among injecting drug users was largely viewed as self-limiting, affecting injectors and their immediate sexual partners but not leading to a more generalised spread of the virus. Recent work on the Asian and Eastern European HIV/AIDS epidemics has proven this perspective to be incorrect.[3] Globally, it is estimated that 5% -10% of all HIV infections are attributable to injecting drug use, mostly via the use of contaminated injection equipment.[4] In many countries of Europe, Asia, the Middle East and the Southern Cone of Latin America, the use of non-sterile injection equipment has remained the most important mode of HIV transmission, accounting for 30%-80% of all reported infections.

HIV/AIDS prevalence (%) among injecting drug users (1998- 2003)



3 WHO/ UNAIDS/ UNODC Advocacy Guide: HIV/AIDS Prevention Among Injecting Drug Users, WHO, 2004.

4 UNAIDS, Institute OS, Agency CID. The Warsaw declaration: A framework for effective action on HIV/AIDS and injection drug use. 2nd International Policy Dialogue. Warsaw; WHO/ UNAIDS/ UNODC. Advocacy Guide: *op.cit.*

Epidemics driven by injecting drug use have different characteristics than epidemics where sexual transmission is the main mode of infection.[5] Most importantly, the efficiency of HIV transmission per injection is almost six times higher than for heterosexual acts. Most studies also found that heroin injectors inject about 1-3 times per day, and cocaine users even more frequently, so the number of possible exposures is also greater. Due to the greater efficiency and higher frequency of risk-exposure associated with injecting drug use, these epidemics tend to spread more rapidly than those driven by sexual transmission. Soon after HIV is introduced into a community of injecting drug users, infection levels in these populations can rise from zero to 50–60% within 1–2 years.[6]

Despite insufficiencies of data, particularly on non-injecting drug use, there is no doubt that the use of drugs, whether injected or taken otherwise, increases the risk of becoming infected with HIV. If injected, the use of contaminated injection equipment can lead to the rapid spread of the virus in the injecting community and beyond. Certain drugs that are not injected can also increase HIV transmission due to their impact on sexual risk-taking behaviour. The sexual partners of drug users, whether drugs users themselves or not, can spread the virus to the larger community, particularly if they are commercial sex workers.

Chapter 4: Towards the creation of an Illicit Drug Index

The "drug problem" has so far not found a representation that goes beyond the existing mosaic of perceptions and statistics, and encompasses them into a single standard measure. Entrusted by Member States to promote and support a coordinated and multilateral response to the world's drug problem, UNODC has been striving to improve the analytical tools at the disposal of governments and the international community to develop increasingly effective control measures.

In this context, UNODC has been working with governments and a variety of organizations to establish norms and standard indicators; to improve data collection and reporting systems; and to facilitate the dissemination of data and information on the nature, extent and evolution of the drug problem and its various dimensions. As part of the ongoing effort to expand the knowledge base that informs policy making, UNODC is now working towards developing a global Illicit Drug Index (IDI).

The Illicit Drug Index would provide a single, standard and comparable measure of a country's overall drug problem, weighted by the size of its population. The Illicit Drug Index combines all the main categories of illicit drugs by converting them into a hypothetical reference drug. It also combines the extent of illicit drug production, trafficking and abuse into a single measure of potential harm that moves along the market chain. Once refined the index could reflect the extent of the drug problem affecting a particular country in comparison with others, weighted by the size of its population.

5 Pisani E, Garnett GP, Grassly NC, Brown T, Stover J, Hankins C, Walker N, Ghys PD. Back to basics in HIV prevention: focus on exposure. *BMJ* 2003;326:1384-7.

6 WHO Training Guide for HIV Prevention Outreach to Injection drug users. Geneva. 2003

1. TRENDS IN WORLD DRUG MARKETS

1. Trends in world drug markets

1.1 The Dynamics of the World Drug Market

1.1.1 How is the drug problem evolving?

What is the level of drug use in the world, and how is it changing?

Some 200 million people, or 5% of the world's population age 15-64, have used drugs at least once in the last 12 months. This is 15 million higher than last year's estimate but remains significantly lower than the number of persons using licit psychoactive substances (tobacco: around 30%; alcohol: around half of the general adult population). The number of cannabis users worldwide is now close to 160 million people or 4% of the population age 15-64. Estimates of the number of ATS users - 26 million people using amphetamines and 8 million using ecstasy - are slightly lower than those of last year's *World Drug Report* (WDR), reflecting declines of methamphetamine use in South-East Asia (notably Thailand) and of ecstasy use in North America (notably in the USA). The number of opiate users is estimated to have risen slightly to around 16 million people (11 million of which abuse heroin), mainly reflecting increasing levels of opiate abuse in Asia. No significant changes were observed in most other parts of the world. The number of cocaine users – close to 14 million people – rose slightly.

In addition to UNODC estimates on the total number of drug users, derived from national survey results and extrapolations from partial information of the drug situation in the various countries, the competent authorities of Member States provide UNODC with their perceptions of the development of the drug situation in their country on a five-point scale (large increase, some increase, no great change, some decrease, large decrease). The statistical analysis of these responses suggests that overall drug consumption continues to spread at the global level.[1]

Based on the drug use trends provided by Member States, cannabis use has seen the largest increase over the last few years, notably cannabis herb. This is followed by ATS, cocaine and opiate (mainly heroin) consumption.

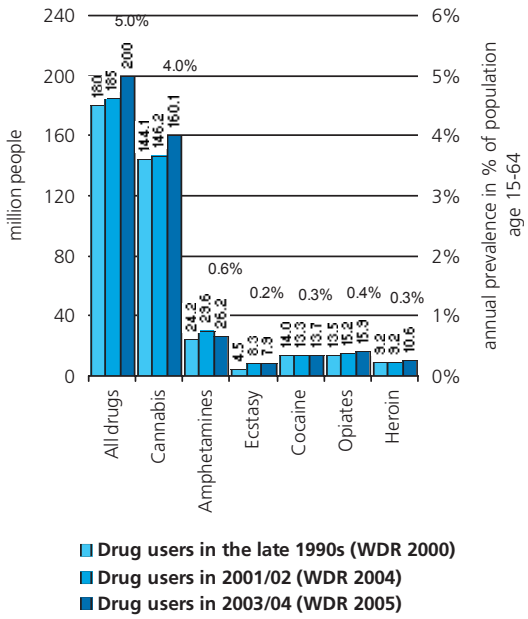
Table 1: Extent of drug use (annual prevalence*) estimates 2003/04 (or latest year available)

	All illicit drugs	Cannabis	Amphetamine-type stimulants		Cocaine	Opiates	of which heroin
			Amphetamines	Ecstasy			
(million people)	**200**	**160.9**	**26.2**	**7.9**	**13.7**	**15.9**	**10.6**
in % of global population age 15-64	5.0%	4.0%	0.6%	0.2%	0.3%	0.4%	0.23%

Sources: Annual Reports Questionnaire Data, National Reports, UNODC estimates.

1 Although countries indicating rising levels of drug consumption continue to outnumber those with falling levels of drug use, the proportions have shifted in recent years in a slightly more positive direction. While in 2000 53% of all reporting countries saw rising levels of drug use, the corresponding proportion fell to 44% in 2003. In parallel, the proportion of countries seeing declines rose from 21% in 2000 to 25% in 2003.

Fig. 1: Estimates of annual prevalence of drug use at the global level in the late 1990s and in 2001-2003



Sources: Annual Reports Questionnaire Data, National Reports, UNODC estimates.

There seems to be a net spread of these substances in geographical terms with the number of authorities reporting falling levels of consumption of these substances less than those reporting rising levels of use. This does not necessarily mean, however, that the total number of drug users is rising, because increases in smaller countries could be offset by declines in a few larger ones. The strongest 'net increases' (number of countries reporting an increase less those reporting a decline) in 2003 were reported for cannabis herb, cocaine, ATS and the benzodiazepines. With the exception of the benzodiazepines, the 'net increases' in 2003 were lower than those reported in 2001, suggesting that the upward trend in consumption lost momentum. The least frequently reported increases concern substances such as morphine, methaqualone, GHB, khat, opium and LSD.

For the main drug categories of concern, specific drug use trend indices were established. The indicies are based on the trends reported by the competent authorities and weighted by the size of the countries' drug using populations. This procedure gives a greater weight to information from countries with a larger drug using population, thus more accurately reflecting the overall trend at the global level (the methodological details are described in the methodology section). For 2003, these indices show (1) an ongoing increase in the use of cannabis, (2) some signs of stabilization for opiates and cocaine and, (3) a stabilization/decline for ATS. Over the last decade, ATS, followed by cannabis, experienced the strongest increases.

… and how are changes affecting the main problem drugs?

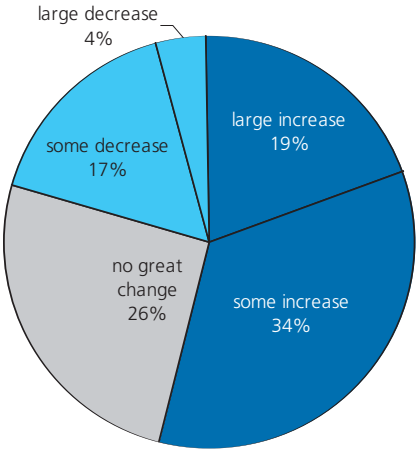
Another key indicator used identify the evolution of the drug problem is treatment demand. This is also used by UNODC as a proxy for the identification of the main 'problem drugs' in the various countries.[2] Unsurprisingly, the main problem drugs at the global level continue to be the opiates (notably heroin) followed by cocaine. For most of Europe and Asia opiates continued to be the main problem drug, accounting for 62% of all treatment demand in 2003. In South-America, drug related treatment demand continued to be mainly linked to the abuse of cocaine (59% of all treatment demand). In Africa, the bulk of all treatment demand – as in the past – is linked to cannabis (64%).

There have also been some important shifts to established patterns in recent years, for example:

- cannabis in treatment demand in North America, Oceania, Europe, Africa and South-America has increased since the late 1990s;
- cocaine has declined in overall drug treatment in North America and has risen in Europe;
- opiates have declined in overall treatment in the Oceania region, a late consequence of Australia's heroin shortage in 2001; and
- ATS in treatment has increased in Asia, Europe, North America and Africa.

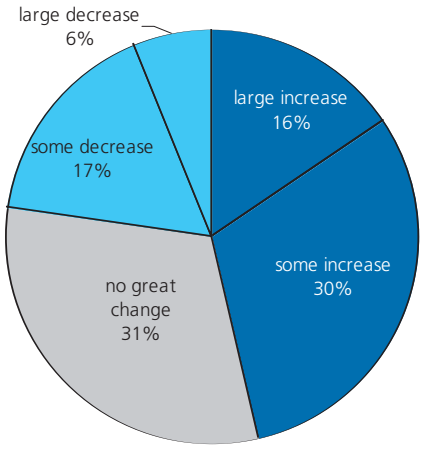
2 Difficulties faced here are that some countries only have data available from a few clinics while others have country-wide monitoring systems in place. Simply adding up the number of people treated for the various drugs would give a strong bias in favour of the countries which have a nationwide monitoring system in place while disregarding the information provided by others. In order to overcome this problem, UNODC decided to calculate the proportions at the country level and, based on these results, to calculate the (unweighted) averages for the respective region.

Fig. 2: Global drug use trends in 2000 (based on information from 96 countries)



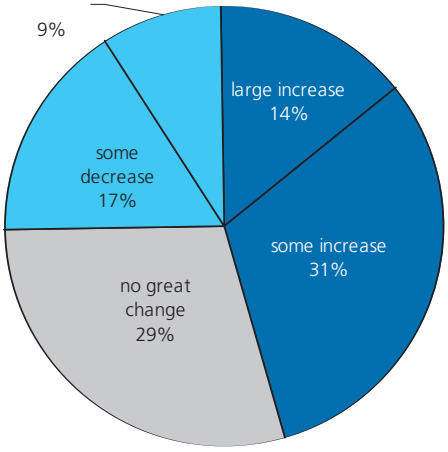
Source: UNODC, Annual Reports Questionnaire Data.

Fig. 3: Global drug use trends in 2001 (based on information from 96 countries)



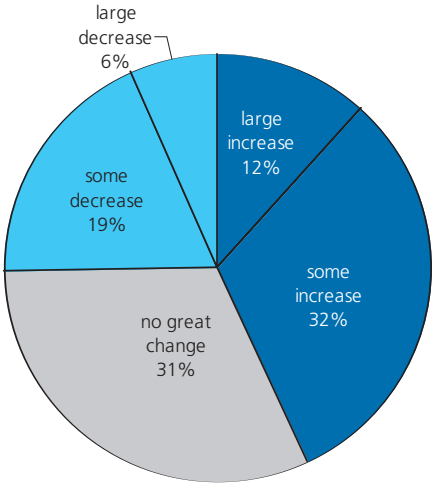
Source: UNODC, Annual Reports Questionnaire Data.

Fig. 4: Global drug use trends in 2002 (based on information from 95 countries)



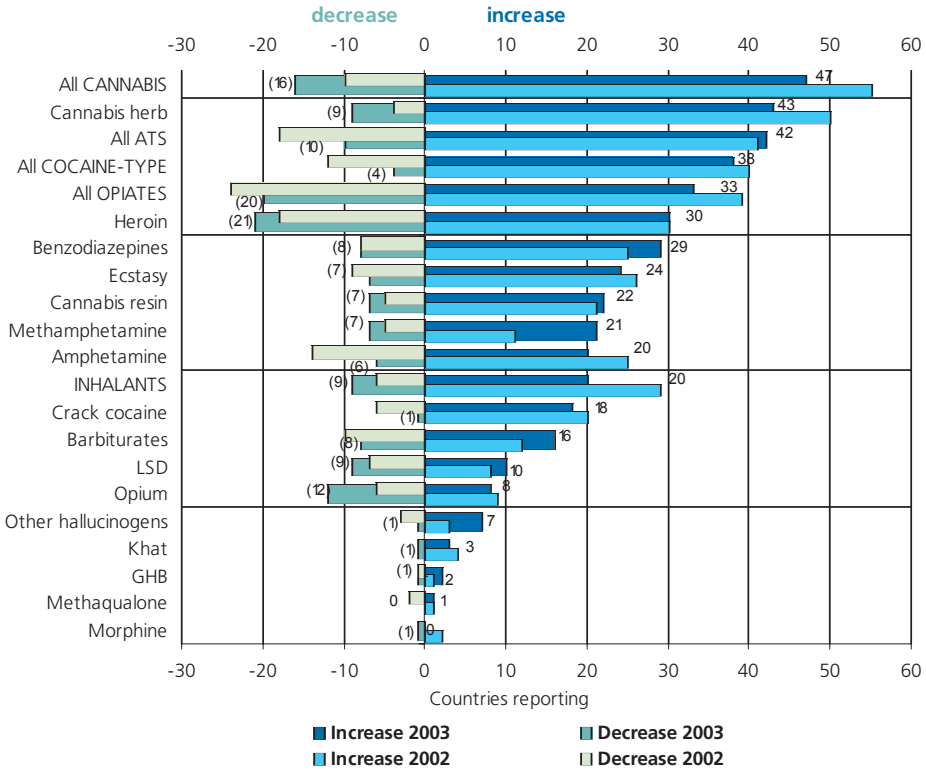
Source: UNODC, Annual Reports Questionnaire Data.

Fig. 5: Global drug use trends in 2003 (based on information from 102 countries)



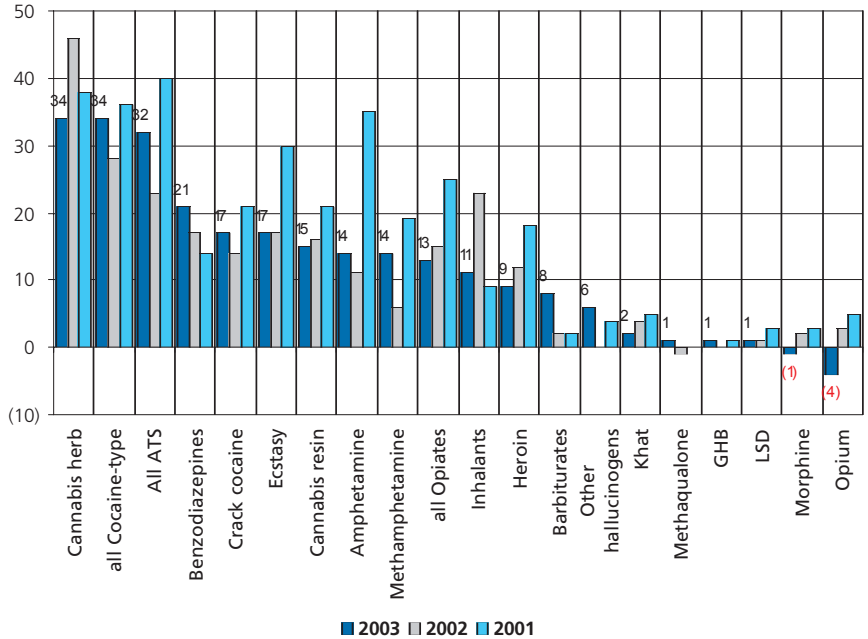
Source: UNODC, Annual Reports Questionnaire Data.

Fig. 6: Global drug use trends of selected drugs in 2002 and 2003 (based on information from 95 countries in 2002 and 102 in 2003)



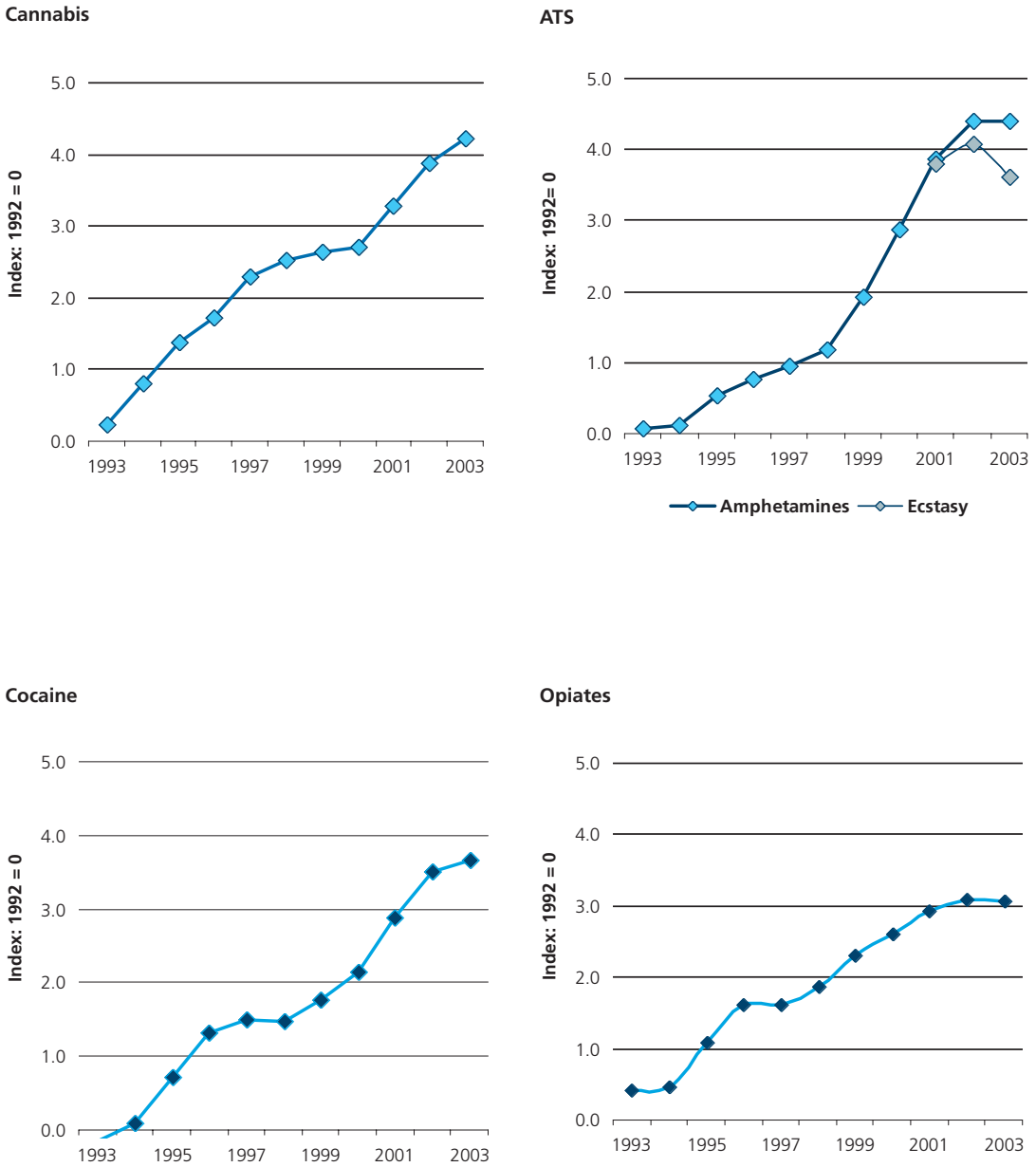
Source: Annual Reports Questionnaire Data.

Fig. 7: Drug use trends 2001, 2002 and 2003 (Number of countries reporting increases less number of countries reporting declines)



Source: Annual Reports Questionnaire Data.

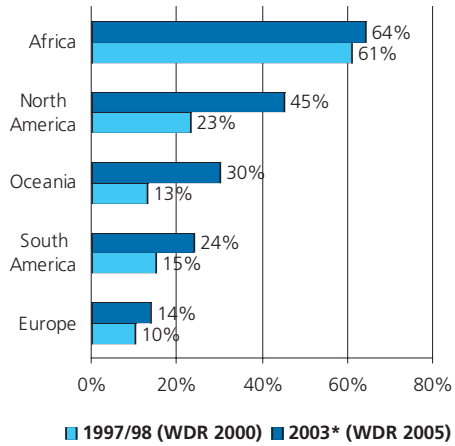
Fig. 8: Drug Use Trend Index (based on expert opinion; weighted by estimated number of users)



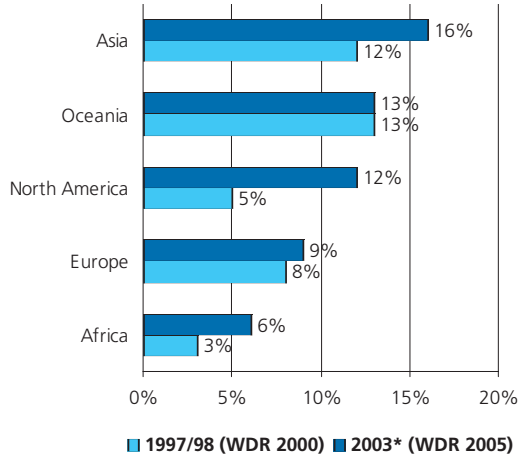
Sources: Annual Reports Questionnaire Data for trends and UNODC, WDR 2005 estimates of the number of drug users.

Fig. 9: Proportion of people in drug treatment being treated for specific substances – 1997/98 and 2003

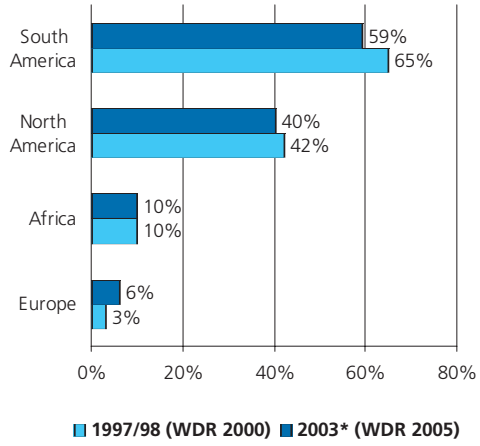
Cannabis



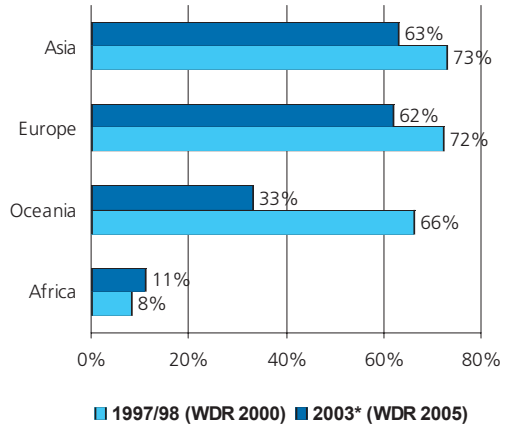
ATS



Cocaine



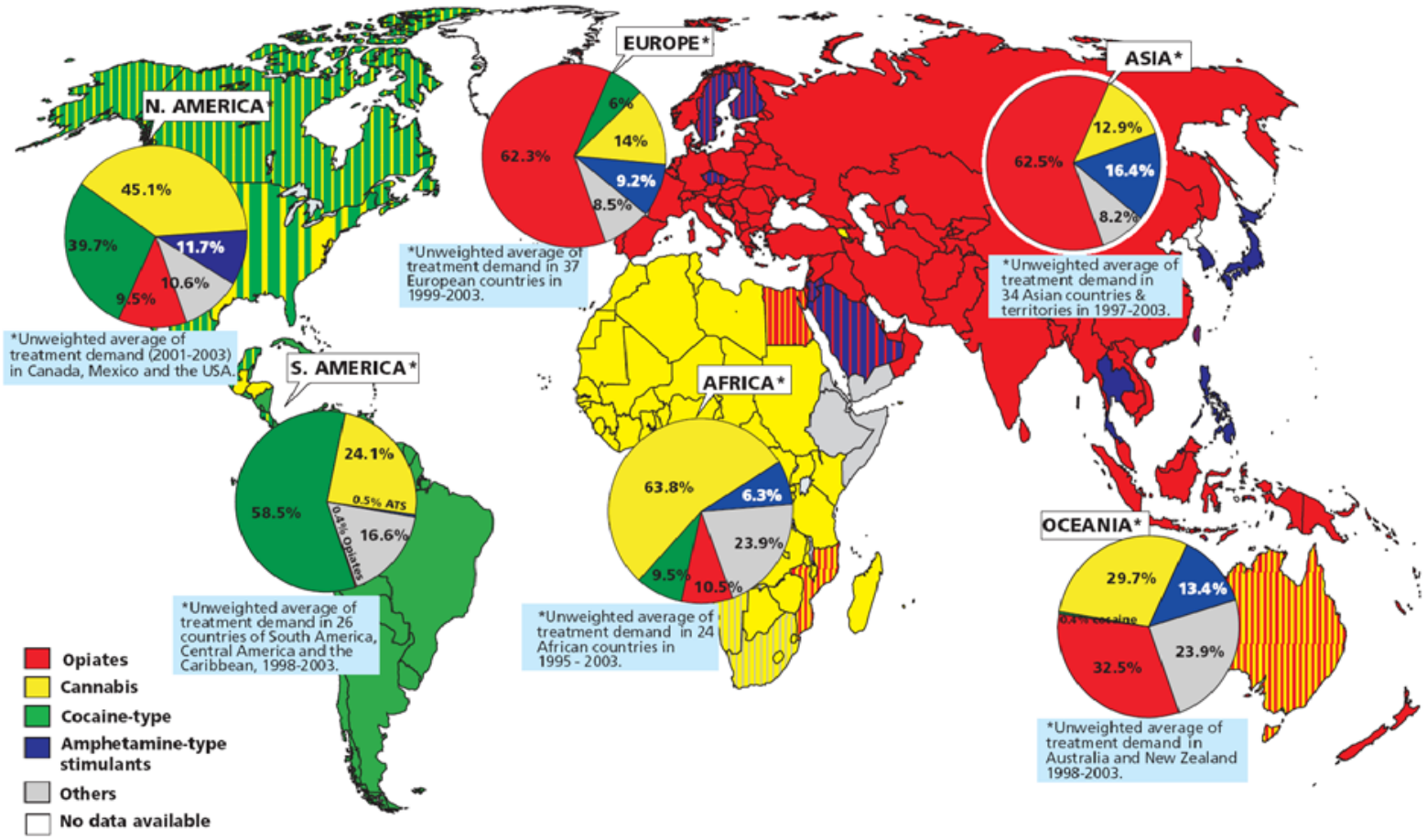
Opiates



* 2003 or latest year available.

Sources: UNODC, Annual Reports Questionnaire Data; National Govt. reports; reports by regional bodies

Map 1. Main problem drugs (as reflected in treatment demand) in 2003 (or latest year available)



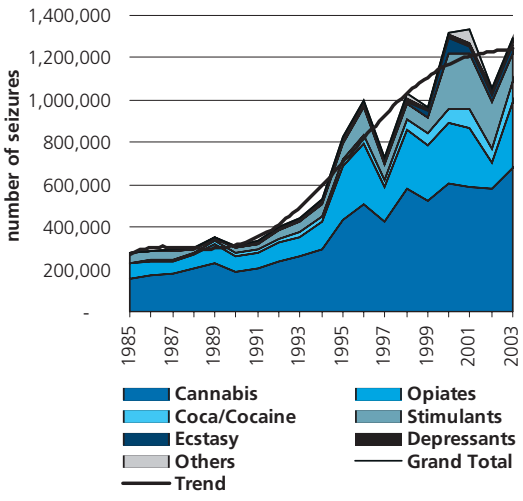
Sources: UNODC, Annual Reports Questionnaire Data/DELTA and National Government Reports.

Seizures – another indicator for the evolution of the drug problem.

Since the time of the League of Nations, data on international drug seizures have been gathered in developed and developing nations alike. Seizures thus represent our most comprehensive data set on drugs, although they do suffer from one important shortcoming. Drugs rarely drop into the laps of law enforcement authorities, and large seizures are often the result of considerable detective work. Law enforcement capacity, as well as the share of that capacity dedicated to the drug issue, varies considerably between nations. As a result, drug seizures can confirm the presence of drugs in an area, but the lack of seizures does not demonstrate their absence, and it is never absolutely clear what share of drugs in circulation are being intercepted. In combination with other indicators, however, seizure data are a powerful tool for investigating trafficking flows and their trends. To understand seizure data, both the number of seizures and the volumes seized need to be taken into account.

A total of 95 countries reported the number of drug seizures made to the UNODC in 2003. Between 1985 and 2003, the number of seizures increased four fold. In the last few years, with the exception of a dip in 2002, the number of seizures seems to have plateaued at about 1.3 million cases. More than half of these were cannabis seizures, about a quarter involved opiates; amphetamines were seized in 10% of the cases, and cocaine in 7%.

Fig. 10: Number of seizure cases, 1985-2003

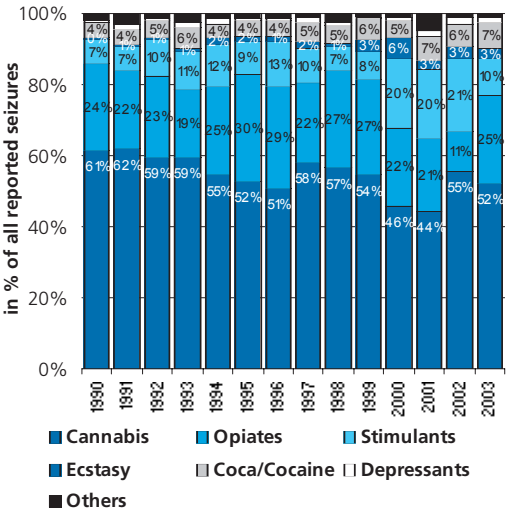


Sources: UNODC, Annual Reports Questionnaire Data / Delta.

In the last decade, the most significant trend has been the increase in the number of seizures of amphetamine-type stimulants (ATS). In 2003, however, this trend reversed sharply, mainly as a result of the decline in ATS seizures from Thailand following a major crackdown on the drugs in the same year. It is also estimated that ATS consumption dropped globally since 2000, so that the reduction in seizures is probably more than just an artefact of changing enforcement patterns.

In contrast, the proportion of opiates seizures rose significantly in 2003, mainly reflecting the revival of Afghan opium production and more seizures in the countries surrounding Afghanistan. The number of cannabis cases has been on the rise since the early 1990s, and its rate of growth exceeded that of other drugs in 2002-2003, in line with a growth in global consumption. Cocaine has remained relatively stable.

Fig. 11: Proportion of seizure cases according to drug category, 1990-2003



Sources: UNODC, Annual Reports Questionnaire Data / Delta.

Quantities of drugs seized increased substantially in 2003.

Turning from the number of seizures to the quantities seized, 115 countries reported total tonnages in 2003. Expressed in terms of weight, quantities increased between 2002 and 2003 in all of the major drug categories: depressants (up 51%), opium (up 38%), heroin/morphine (up 32%), cocaine (up 33%), cannabis (up 24%), and ATS (up 18%). While the quantities of drugs seized has increased, year on year, for

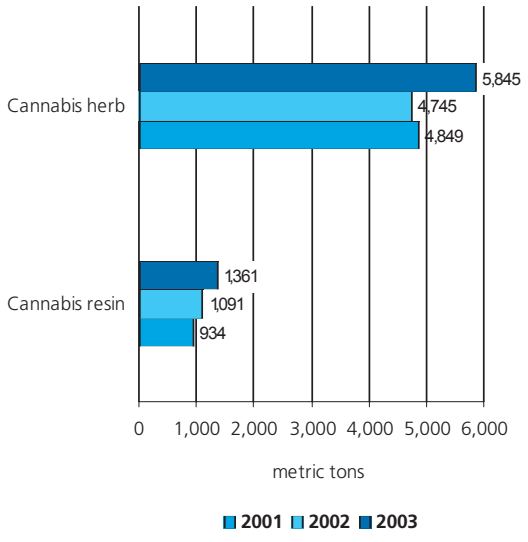
the last decade, last year's increases were higher than average in all categories, except ATS, which was about the same. The reasons for this surge are still unclear.

By weight, cannabis tends to top the rankings of quantities seized, and 2003 was no exception, with cocaine, opium, heroin/morphine, and ATS following. This ranking is different than that of the number of seizures made, particularly for cocaine. This is because cocaine tends to be transported in large quantities, the global average per seizure being 3.1 kg, almost 35 times the size of the average ecstasy seizure (0.09 kg).

A more meaningful comparison can be made by reducing total volumes to dose-units. In 2003, global drug seizures increased by 10% and more than doubled between 1985 and 2003, from 14.3 billion to 31.3 billion doses. Cannabis still remains the top drug seized, with 70% of all drug doses seized being cannabis, followed by cocaine (16%), opiates (9%) and ATS (3%).

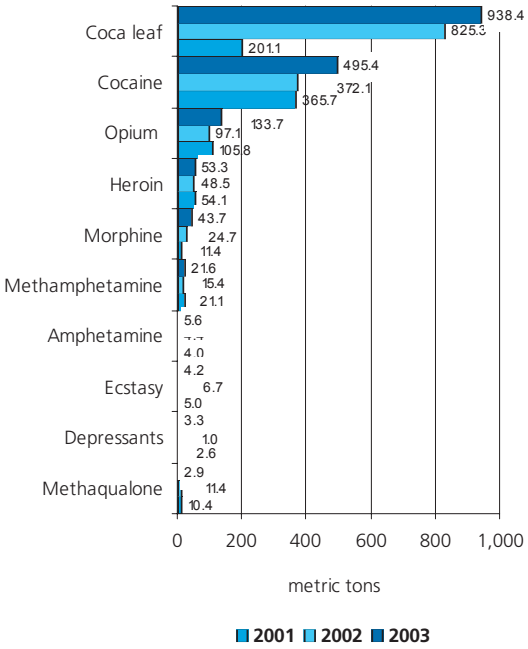
Thus, in terms of the quantities involved, trends for most substances tend to be upward in recent years, and this increase is not confined to any geographic region. Europe shows the strongest growth rate of seizures (13% per annum), followed by Oceania (9% per annum). The largest seizures, however, continue to be made in the Americas (40% of the world's seizures by weight in 2003, down from 58% in 1985), followed by Europe (30% in 2003, up from 7% in 1985)), Asia (16%), Africa (13%), and Oceania (0.4%).

Fig. 12: Global cannabis seizures (in weight equivalents), 2001-2003



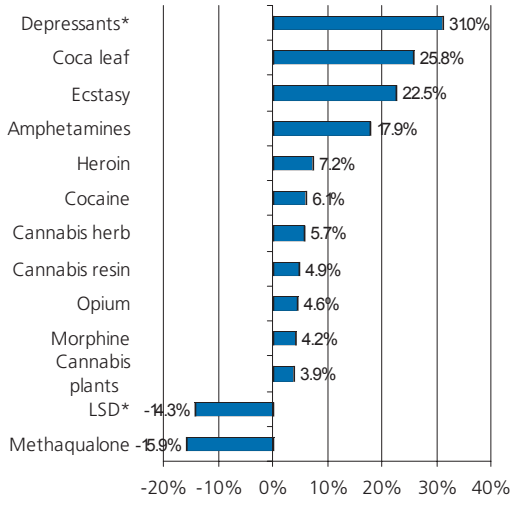
Source: UNODC, Annual Reports Questionnaire Data / DELTA.

Fig: 13: Global drug seizures, excluding cannabis (in weight equivalents), 2001-2003



Source: UNODC, Annual Reports Questionnaire Data / DELTA.

Fig. 14: Average annual change in seizures, 1993-2003



* seizures in units

Source: UNODC, Annual Reports Questionnaire Data / DELTA.

Fig. 15: Trends in world seizures, 1993 -2003 (in metric mt)

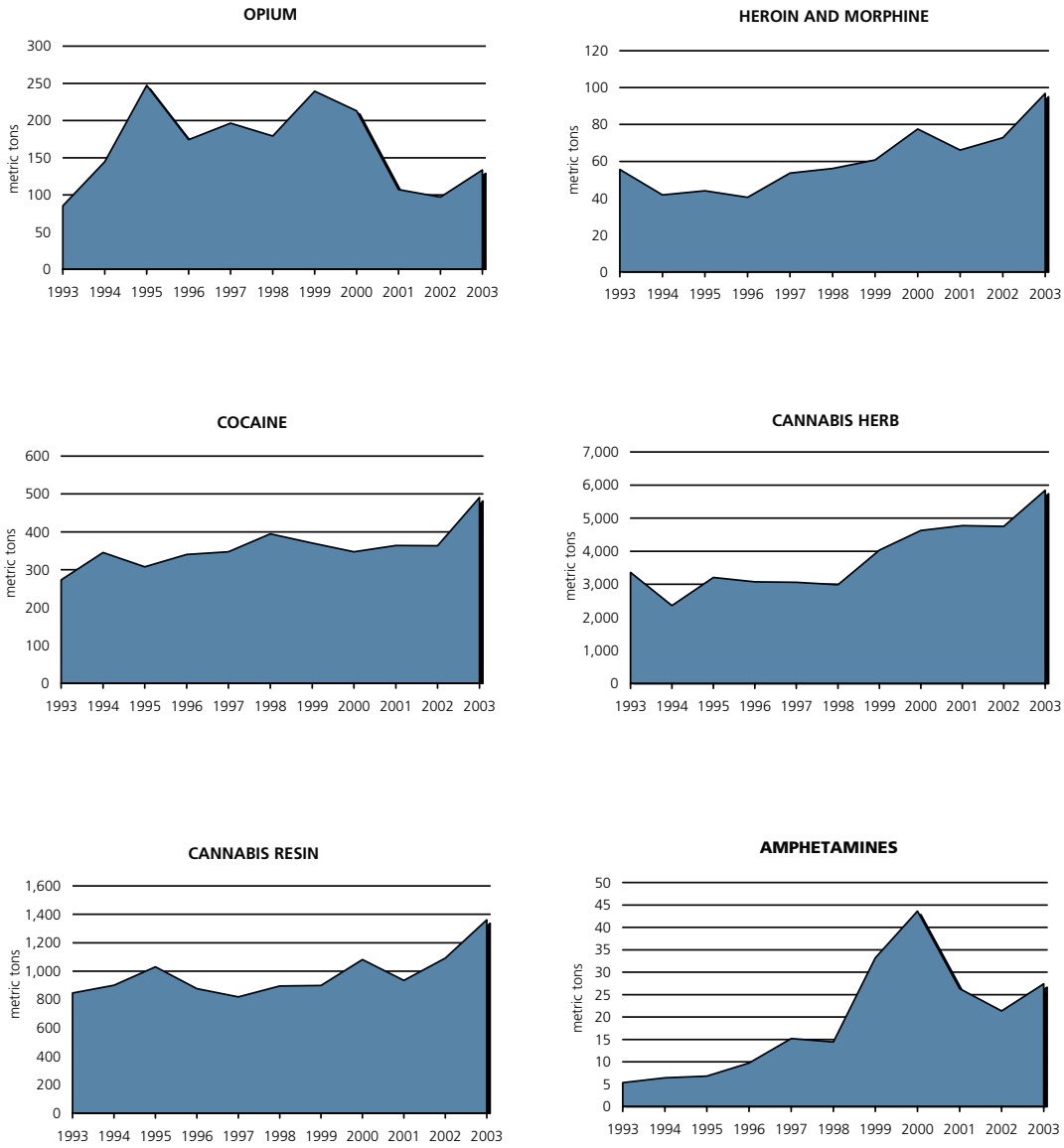
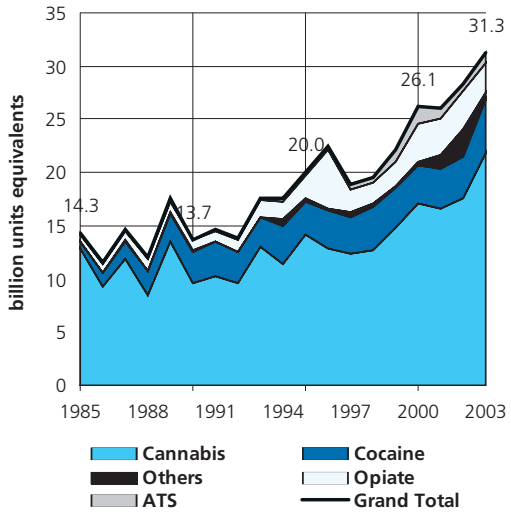
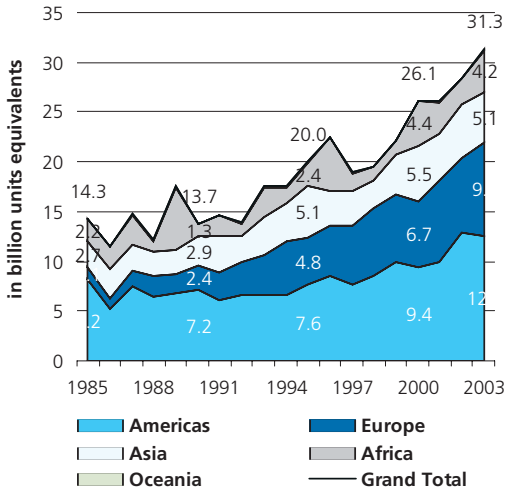


Fig.16: Global drug seizures in unit equivalents, 1985-2003



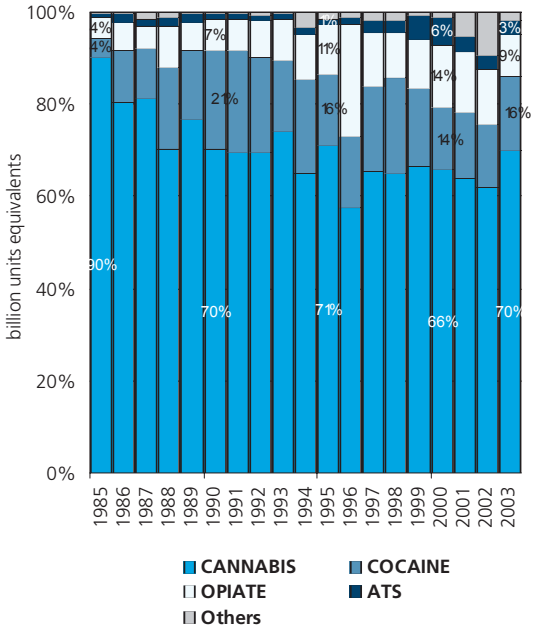
Source: UNODC, Annual Reports Questionnaire Data / DELTA.

Fig. 18: Regional breakdown of drug seizures in unit equivalents, 1985-2003



Source: UNODC, Annual Reports Questionnaire Data / DELTA.

Fig. 17: Proportion of drug categories in seizures, in unit equivalents, 1985-2003



Source: UNODC, Annual Reports Questionnaire Data / DELTA.

The global production trend is rather stable for opium, and declining for coca but seems to be increasing for cannabis and, following some declines, for ATS .

UNODC, in collaboration with selected governments, uses a sophisticated monitoring system based on the use of modern satellite technology with on the ground verification ('ground truthing') and yield surveys. This method produces some of the most rigorous data on the drug problem, because the measurement is direct and quantifiable. Production data for opium and coca leaf are thus probably the most reliable indicators of how the drug problem is evolving at the global level. Information on the final output – heroin or cocaine – is more difficult to obtain and subject to a higher degree of uncertainty as direct access to the operators of clandestine laboratories is difficult. Existing transformation ratios are usually based on rather small samples of case studies in which operators demonstrated the cocaine/heroin transformation processes to law enforcement bodies. How representative the results of these case studies are for the clandestine manufacturing process as a whole is unknown but they are the best estimates currently available.

While production is clearly linked to trafficking and consumption, sometimes the links are less direct than they appear. There can be, for example, important time

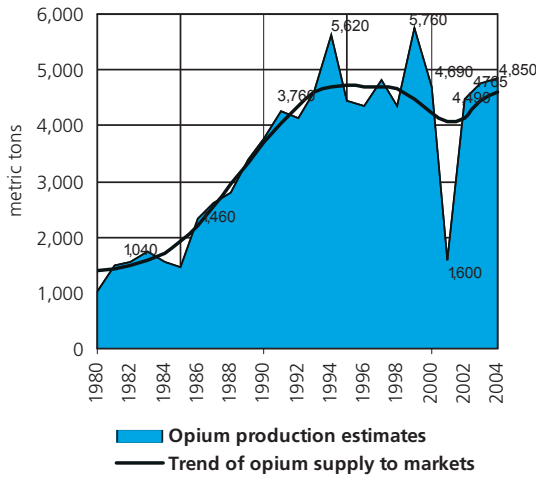
lags (of 1 or 2 years) as a result of the manufacturing processes (opium → morphine → heroin; coca leaf → coca paste → coca base → cocaine-HCL), the length of the trafficking routes, and the existence of stocks which are known to have the potential to reduce the impact of supply side changes.

Currently about 196,000 ha are under opium poppy and 158,000 ha are under coca cultivation worldwide. To put this in perspective, the area under opium and coca cultivation is a similar size as the land area covered by a small country such as Liechtenstein (160,000 ha) or an extended urban area such as London (168,000 ha), or about twice the size of cities such New York (78,000 ha) or Berlin (89,000 ha).

Following strong increases in 1980s, opium production has been basically stable at around 4,000 – 5,000 metric mt since the early 1990s. Production stood at 4,765 mt in 2003 and 4,850 mt in 2004[3]. 87% of opium for the illicit market is now produced in Afghanistan. Probably because of the large stocks built up in the late 1990s, the 2001 opium production ban in Afghanistan[4] had only limited consequences for the global supply of opiates. The long-term trend has been towards rising levels of opium production in Afghanistan. This has largely offset the strong declines reported from Myanmar and Laos in recent years, bringing global potential heroin production in 2004 to 565 metric mt.

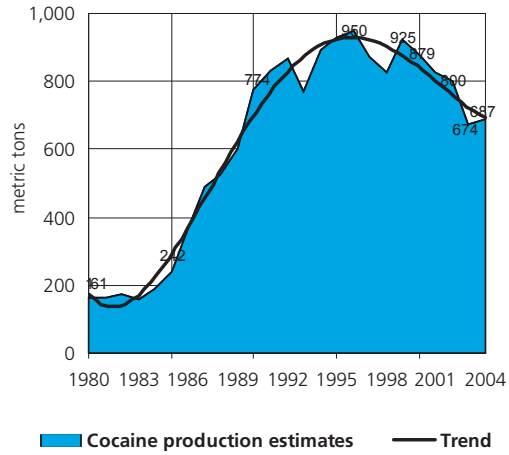
Potential cocaine production peaked in the second half of the 1990s (950 mt in 1996 and 925 mt in 1999), but has been declining significantly thereafter to 674 mt in 2003.[5] In 2004, cocaine production increased marginally to 687 mt. Despite this, overall production remains 26% lower than in 1999. The declines of potential cocaine production in recent years were mainly the result of progress made in Colombia. The increase in 2004 was due to stronger coca leaf production in both Peru and Bolivia. Both countries had already made significant progress in cutting coca leaf production a few years earlier, however, and production is thus still lower than in 1998 or previous years.

Fig. 19: Global potential opium production, 1980-2004



Sources: UNODC/ICMP and UNODC/DELTA.

Fig. 20: Global potential cocaine production, 1980-2004



Sources: UNODC/ICMP and UNODC/DELTA.

3 UNODC usually speaks of potential rather than actual heroin or cocaine production. Potential production refers to the amount of heroin or cocaine produced if all of the raw material (opium/coca leaf) produced in a country, were transformed into the end product. Actual heroin/cocaine production of a country may well differ. It would be lower if not all of the raw material was transformed into the end-products (e.g. as there is local consumption of the raw material) or it could be higher if raw material was imported from a neighbouring country, or if the manufacturing processes improved.

4 Which caused production in Afghanistan to fall to 185 metric mt.

5 Given revised production estimates from Bolivia, total cocaine estimates for the year 2003 differ slightly from production estimates published in last year's World Drug Report.

Cannabis production has been rising in recent years and the THC content of cannabis produced in a number of developed countries has been increasing. Available information on the extent and the trends of cannabis production is far less reliable than that for coca and opium. With the exception of the survey UNODC conducts with the Moroccan Government on cannabis resin production, estimates for cannabis resin production are usually made on the basis of indirect indicators. Based on such information, UNODC estimates that more than 7,000 mt of cannabis resin. Production of cannabis herb is estimated at slightly more than 40,000 mt in 2003, exceeding last year's published estimate of an annual production of around 32,000 mt of cannabis herb. A significant part of this increase can be linked to methodological changes. Nonetheless, actual production is likely to have increased as well.

Following years of massive increases, UNODC estimates of global ATS production for the year 2003 were slightly lower than those published in last year's World Drug Report: 332 mt of amphetamines (methamphetamine and amphetamine) and 90 mt of ecstasy for 2003 versus 410 mt of amphetamines and 113 mt of ecstasy published in last year's WDR for 2000/2001. The methodological approach to arrive at these estimates did not change. Nonetheless, it is difficult to judge to what extent this 'decline' in production was real (as opposed to a statistical artefact). Estimates of the extent of global ATS production can be only established by indirect means. These estimates were derived from estimates of the number of ATS drug users, ATS seizures and ATS precursors seizures. Early indications for 2004 indicate that ATS production and consumption have begin to increase again.

1.1.2 The outlook for world drug markets

Afghanistan will determine the size and development of the world's main opiate markets…

The global heroin market was basically stable in 2003 with increases in production limited to Afghanistan and increases in consumption limited to countries in the neighbourhood of Afghanistan. In 2004, although the area under cultivation increased by 64%, the yield per hectare declined strongly as a consequence of drought and various plant diseases. Opium production thus rose by 'just' 17% in the country. At the global level, this increase was largely offset by a 54%, and 64%, decline in opium production in Myanmar and Laos respectively. The net result was a marginal 2% increase in opium production at the global level. Early indications are that overall production will remain stable through 2005.

Opium production in South-East Asia is now 78% lower than it was in 1996. Production in this subregion is forecast to decline further in 2005. If the declines witnessed over the last few years are sustained, it would not be too far outside the realm of possibility that South-East Asia could become virtually free of illicit poppy cultivation over the next few years. Of course, encouraging trends are no reason for complacency. There is evidence, for example, that in the Eastern Shan States of Myanmar – as already highlighted in last year's World Drug Report - some communities are facing a serious humanitarian crisis. As Myanmar and Laos attempt to reach the goals agreed upon by the international community at the 1998 United Nations General Assembly Special Session (UNGASS), it is of paramount importance that the donor community take its share of the burden and provide relief and development assistance to the most affected populations in these areas. The risk being that a humanitarian crisis could cause farmers to revert to opium production. Strong opium price rises are already increasing the attractiveness of the latter option.

As compared to last year, the situation looks slightly more positive for Afghanistan. Presidential elections were held in 2004 and the Government is gradually strengthening its control over the country and those involved in the opium business. A Rapid Assessment conducted by UNODC earlier in 2005 indicated that the area under poppy cultivation has declined in 2005 as compared to the record levels in 2004. It is, however, not yet certain whether the reduction of the land under opium poppy cultivation would be sufficient to offset a possibly higher yield than observed in 2004.

In the meantime the country's last opium harvest is still finding its way to the consumer markets of Europe and other regions. Purity levels of heroin in some European countries have already started to rise – a clear indication that there is sufficient and rising supply. Thus, while the mid-term prospects are rather positive, problems could still emerge in some of the main consumer markets this year. Opium produced in Afghanistan usually ends up in these markets in the form of heroin with a one year delay. Some of the transit countries have already started to report higher levels of heroin abuse.

Slow downs have been observed over the last few years in the Oceania region. Following the dismantling of several major networks importing heroin into Australia in late 2000, heroin abuse rates declined substantially and

remained at low levels in subsequent years, including 2004. This is encouraging given that the acute heroin shortage of 2001 has largely disappeared. It is now possible that these lower prevalence rates will be maintained in the foreseeable future.

…while lower levels of coca leaf production have not prevented the ongoing geographical spread of cocaine consumption.

While overall levels of cocaine use remained largely stable and production estimates show a decline as compared to the late 1990s, there are still far more countries reporting rising rather than falling levels of cocaine use. Moreover, the increase in cocaine seizures and the high interception rate in 2003 did not lead to price rises or any significant declines in cocaine purity in the main consumer markets. This puzzles analysts and law enforcement. Possible hypotheses to explain such discrepancies could be (i) the existence of unknown areas in the three Andean countries or in other countries where coca cultivation takes place; (ii) a rise in yields which is not, as yet, reflected in production estimates; (iii) the existence of cocaine stocks, built up in the late 1990s, which still fuel the markets; and/or (iv) improvements in the cocaine manufacturing process (following some deterioration in the late 1990s), resulting in more cocaine being produced out of less coca leaf.

How likely are these hypotheses? (i) UNODC has, so-far, no indications of any large-scale coca production outside the three traditional coca producing countries, but this does not mean that there could be some improvements in the ability of 'cocaleros' to hide their production, thus reducing the likelihood of such fields to be detected by satellite photos or by aerial photography. (ii) There are ongoing studies in the three Andean countries to verify the yields that are currently being applied. While the results of these studies are not yet available, so far there is some suggestion that in some regions the yields could be slightly higher. (iii) The existence of important cocaine stocks in the Andean region is a potentially plausible explanation. However, there is not much evidence for this. If such stocks had been built up in the late 1990s, they should be soon exhausted and a contraction of the market should then become visible. (iv) There is some evidence for the last hypothesis, though not sufficient to fully explain the above mentioned market paradox. Given successful operations in the late 1990s to stop the diversion of potassium permanganate, a key precursor chemical in the manufacture of cocaine, the quality and the yield of coca leaf appears to have deteriorated. This could have meant that actual cocaine production was less than the potential cocaine production estimates calculated for the late 1990s. In subsequent years, however, cocaine manufacturers seem to have adapted by using alternative chemicals (e.g. sodium hypochlorite, know as leja in the region) which led again to better quality cocaine and better extraction rates. There has also been speculation that clandestine laboratories have diverted various oxidizers from the cement industry to cocaine processing in order to improve the output of cocaine manufacture. All of this could have meant that the actual decline in the cocaine output - despite a 30% reduction in the area under coca cultivation between 1999 and 2003 - may have been less significant over this period.

Further investigation and the conclusion of these ongoing studies will help us to better understand this paradox, and thus the market. In any case, the trend towards lower production of cocaine did not continue in 2004, as the area under coca cultivation rose in both Bolivia and Peru. This is a worrying loss of momentum for both countries which had already made significant progress to curb coca production. The net results (+2%) were not a real problem in 2004. However, ongoing increases in these two countries may eventually weaken the progress the region has made in controling coca supply. This is a vital juncture, and it will be important for the international community to continue to support alternative livelihoods programmes.

In parallel, the risk of a further dispersion of the cocaine markets continues. Europe is particularly vulnerable, having already seen a steady growth of its cocaine markets over the last decade. Even though there are signs of stabilization in some countries, consumption continues to increase in others. In 2003, 14 European countries reported an increase and 10 a stabilization. Not a single country experienced a decline in cocaine use.

A particular challenge will be the spread of crack-cocaine: 7 European countries reported an increase, 9 saw stable levels, while, again, not a single European country identified a decline in 2003.

As trafficking routes evolve, paying local assistants in kind along new routes, the ongoing dispersion to countries in the Americas and in Africa will continue. Recent trends saw the increased use of various West African countries as transit routes to Europe. Data from South Africa on treatment demand, provided by the South African Community Epidemiology Network on Drug Use (SACENDU), clearly show that treatment for cocaine abuse was on the rise over the 2002-2004 period, notably in locations where previous prevalence rates had not been high.

In contrast, cocaine use has stabilized in the United States, the world's largest cocaine market. Fortunately, there are no indications that this will change over the

foreseeable future. Given increased treatment possibilities for hard-core cocaine addicts, there is even a likelihood that the overall amounts of cocaine consumed in the USA might decline.

The cannabis market continues to thrive…

Cannabis continues to be the most widely produced, trafficked and consumed drug worldwide. All indicators – production, seizures and consumption - suggest that the market at the global level is expanding further. For the time being, there is no reason to believe that this expansion will stop.

Between 1993 and 2003, 163 countries and territories were identified as cannabis producing countries. This clearly highlights its pervasiveness, as opposed to opium or coca leaf production, which are limited to just a few countries and locations. Nonetheless, there are some concentrations. The bulk of cannabis herb production takes place in North America and in Africa. The largest seizures of cannabis herb took place in 2003 in Mexico (37% of total) and in the USA (21%), followed by a number of African (Tanzania, Nigeria) and South American (Colombia, Brazil) countries.

Cannabis resin production is far more concentrated, with Morocco, Afghanistan and Pakistan being the main producers. Survey results from Morocco showed that cannabis resin production fell 10% to 2,760 mt in 2004.

Overall cannabis consumption has been rising in South-America (including the Caribbean and Central America), in Africa, in Europe and in several Asian countries. By contrast, it has remained largely stable in North America. Declines were reported for some countries in South-East Asia as well as the Oceania region. No significant changes of these patterns is expected in the short run.

… as signals from the ATS markets are mixed – although a future increase is likely.

Signals from the ATS market are complex. Overall the strong increases in ATS use observed in the 1990s were not continued into the first years of the new millennium. This year's signals include: an ongoing strong increase in the number of ATS laboratories being dismantled, lower levels of 'amphetamines' (methamphetamine and amphetamine together) seizures as compared to the year 2000, falling ecstasy seizures in 2003, falling ATS precursor seizures over the 2000-2003 period, and a stable/declining ATS use trend index in 2003.

However, a number of (still very partial) indicators suggest that a decrease in use will not be repeated in the near future. One reason for this forecast is that ATS seizures started rising in 2003. Amphetamine seizure reports received from some European countries indicate a further increase in 2004. Also, the fact that amphetamine prices have fallen in a number of European countries over the 2000-2004 period suggests that production may have been rising. Finally, early reports of abuse trends received from countries in East and South-East Asia suggest that the stabilization/ decline seen in 2003 did not continue in 2004. While ecstasy use declined strongly in the USA among high school students over the 2001-2004 period, methamphetamine use among 12th graders started increasing again slightly in 2004. After several years of decline, availability of methamphetamine was reported by US students to have increased slightly in 2004.

1.2 Opium / Heroin market

1.2.1 Production

While global cultivation of opium poppy is increasing…

In 2004, global illicit opium poppy cultivation increased by 16%, due entirely to increased cultivation in Afghanistan. In Southeast Asia, in contrast, opium poppy cultivation has decreased continuously since 1998. In 2004, only 50,900 ha of opium were cultivated in Lao PDR and Myanmar, as compared to 158,000 ha in Lao PDR, Myanmar, Thailand and Viet Nam in 1998. Despite this year's increase, global opium poppy cultivation is still far less than it was in the nineties, and since 1998 - the year of the UNGASS - global cultivation has declined by 18%.

In 2004, 67% of the global opium poppy cultivation took place in Afghanistan. The area under cultivation increased from about 80,000 ha in 2003 to an unprecedented 131,000 ha in 2004. Of greatest concern is the fact that opium poppy cultivation has been introduced into previously unaffected areas and is now found in all 34 provinces of the country.

Over the last six years, the Governments of Lao PDR and Myanmar have achieved a reduction of illicit cultivation in their countries. In Myanmar, rapid reduction is being promoted in line with a national action plan to eradicate the crop by the year 2014. The total area under opium poppy cultivation in Myanmar was reduced 23% to 44,200 ha in 2004. The Government of the Lao PDR has a similar goal of eliminating opium poppy cultivation by the year 2005. The total area under opium poppy cultivation in 2004 was down 43% to 6,600 ha in 2004. Both countries promote alternative livelihood programmes to increase the likelihood that these reductions will be sustainable and the overall goals will be met on target. But many farmers still lack access to these programmes, and assistance from the international community is limited.

After a short boom in 1994, opium poppy cultivation in Colombia has remained relatively stable and was about 4,000 ha during 2002-2004. The Government reported that 3,000 ha of opium poppy were sprayed and 800 ha manually eradicated in 2004. This is an increase of 71% compared to 2003. The Government of Peru estimated opium poppy cultivation in that country at around 1,500 ha in 2004, about the same as the estimate of 1,400 ha in 2001.

Following declines in the early 1990's, opium cultivation in Pakistan remained below 1,000 ha over the 1996 - 2002 period before increasing strongly in 2003 and 2004. The government has been proactive in implementing eradication, thus keeping cultivation under control. Low levels of opium poppy cultivation exist in many regions and countries such as Viet Nam, Russia, Ukraine, Central Asia, the Caucasus region, Egypt, Peru and Thailand.

…global opium production is almost stable.

Global opium production increased by only 2% to 4,850 metric tons in 2004. The increase was minimal due to a relatively low opium yield per hectare in Afghanistan, Lao PDR and Myanmar. Unfavourable weather conditions (insufficient rain and cold temperatures) and disease kept potential opium production in Afghanistan at around 4,200 metric tons (mt), representing an increase of about 17% compared to 2003. In Myanmar, the North Shan experienced a severe drought and the maximum potential yield fell to 8 kg/ha. In Lao PDR the average national opium yield potential for 2004 was even lower, at 6.5 kg/ha. The potential opium production in Lao PDR and Myanmar is around 43 and 370 metric tons respectively. Opium production in Pakistan, Thailand and Viet Nam remained relatively low in 2004. 40 metric tons of opium were produced in Pakistan in 2004. For Latin America opium production is estimated at around 160 metric tons.

The potential farm gate value of opium production in 2004 at the global level is estimated at US$ 747 million,

less than in 2003 (1.2bn). About 80% of this was generated in Afghanistan. Given the strong fall of opium prices in Afghanistan in 2004, the overall farm gate value of opium production was some 41% lower than in 2003 (US$ 600 million in 2004 against US$ 1,020 million in 2003).

Opium prices are inversely proportional to supply trends in Afghanistan.

Opium prices in Afghanistan were declining with increasing supplies. The average price for fresh opium at the time of harvest, weighted by regional opium production, amounted to US$ 92 per kilogram in 2004, a 69% decline compared to the previous year. Prices for fresh opium at the farm-gate are, however, still two to three times higher than in the second half of the 1990s.

The opposite trend is observed in Southeast Asia, where farm gate prices of opium have increased in Lao PDR and Myanmar. The average farm gate sale price of opium in 2004 in Myanmar was estimated at US$ 234/kg, an increase of 80%, in US$ terms. In Laos, the average farm gate price of opium was estimated at US$ 218/kg, an increase of 27% over 2003.

Despite increased farm gate prices, it is expected that the decline of cultivation in Southeast Asia will continue as the Government of Lao PDR and the Government of Myanmar remain determined to achieve the goals set in their respective national drug control programmes. The sustainability of these reductions in cultivation will depend on the availability of alternative livelihoods opportunities for local communities. In Afghanistan, the Government has indicated that it will renew its efforts to curb opium poppy cultivation. The first indications of a possible reduction have been reported in the rapid assessment survey conducted by UNODC in the beginning of February 2005.

OPIUM

Table 1. GLOBAL ILLICIT CULTIVATION OF OPIUM POPPY AND PRODUCTION OF OPIUM, 1990-2004

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
CULTIVATION[a] IN HECTARES															
SOUTH-WEST ASIA															
Afghanistan	41,300	50,800	49,300	58,300	71,470	53,759	56,824	58,416	63,674	90,583	82,171	7,606	74,100	80,000	131,000
Pakistan	7,488	7,962	9,493	7,329	5,759	5,091	873	874	950	284	260	213	622	2,500	1,500
Subtotal	48,788	58,762	58,793	65,629	77,229	58,850	57,697	59,290	64,624	90,867	82,431	7,819	74,722	82,500	132,500
SOUTH-EAST ASIA															
Lao PDR	30,580	29,625	19,190	26,040	18,520	19,650	21,601	24,082	26,837	22,543	19,052	17,255	14,000	12,000	6,600
Myanmar	150,100	160,000	153,700	165,800	146,600	154,070	163,000	155,150	130,300	89,500	108,700	105,000	81,400	62,200	44,200
Thailand [b]	1,782	3,727	3,016	998	478	168	368	352	716	702	890	820	750		
Viet Nam [b]	18,000	17,000	12,199	4,268	3,066	1,880	1,743	340	442	442					
Subtotal	200,462	210,352	188,105	197,106	168,664	175,768	186,712	179,924	158,295	113,187	128,642	123,075	96,150	74,200	50,800
LATIN AMERICA															
Colombia [c]		1,160	6,578	5,008	15,091	5,226	4,916	6,584	7,350	6,500	6,500	4,300	4,100	4,100	3,950
Mexico [d]	5,450	3,765	3,310	3,960	5,795	5,050	5,100	4,000	5,500	3,600	1,900	4,400	2,700	4,800	n.a.
Subtotal	5,450	4,925	9,888	8,968	20,886	10,276	10,016	10,584	12,850	10,100	8,400	8,700	6,800	8,900	8,750 [f]
OTHER															
Combined [e]	8,054	7,521	2,900	5,704	5,700	5,025	3,190	2,050	2,050	2,050	2,479	2,500	2,500	3,000	3,890
GRAND TOTAL	262,754	281,560	259,686	277,407	272,479	249,919	257,615	251,848	237,819	216,204	221,952	142,094	180,172	168,600	195,940
POTENTIAL PRODUCTION IN METRIC TONS OPIUM															
SOUTH-WEST ASIA															
Afghanistan	1,570	1,980	1,970	2,330	3,416	2,335	2,248	2,804	2,693	4,565	3,276	185	3,400	3,600	4,200
Pakistan	150	160	181	161	128	112	24	24	26	9	8	5	5	52	40
Subtotal	1,720	2,140	2,151	2,491	3,544	2,447	2,272	2,828	2,719	4,574	3,284	190	3,405	3,652	4,240
SOUTH-EAST ASIA															
Lao PDR	202	196	127	169	120	128	140	147	124	124	167	134	112	120	43
Myanmar	1,621	1,728	1,660	1,791	1,583	1,664	1,760	1,676	1,303	895	1,087	1,097	828	810	370
Thailand [b]	20	23	14	17	3	2	5	4	8	8	6	6	9		
Viet Nam [b]	90	85	61	21	15	9	9	2	2	2					
Subtotal	1,933	2,032	1,862	1,998	1,721	1,803	1,914	1,829	1,437	1,029	1,260	1,237	949	930	413
LATIN AMERICA															
Colombia [c]		16	90	68	205	71	67	90	100	88	88	80	76	76	73
Mexico	62	41	40	49	60	53	54	46	60	43	21	71	47	84	n.a.
Subtotal	62	57	130	117	265	124	121	136	160	131	109	151	123	160	157 [f]
OTHER															
Combined [e]	45	45	-	4	90	78	48	30	30	30	38	18	14	24	40
GRAND TOTAL	3,760	4,274	4,143	4,610	5,620	4,452	4,355	4,823	4,346	5,764	4,691	1,596	4,491	4,765	4,850
HEROIN															
Potential HEROIN	376	427	414	461	562	445	436	482	435	576	469	160	449	477	565 [g]

(a) Harvestable after eradication.
(b) Due to small production, cultivation and production were included in the category " Other countries", for Viet Nam as of 2000 and for Thailand as of 2003.
(c) According to the Government of Colombia, cultivation covered 7,350 ha and 6,500 ha and production amounted to 73 mt and 65 mt in 1998 and 1999 respectively.
(d) Sources: As its survey system is under development, the Govt of Mexico indicates it can neither provide cultivation estimates nor endorse those published by UNODC which are derived from US Government surveys.
(e) Includes countries such as Russia, Ukraine, Central Asia, Caucasus region, Egypt, Peru, Viet Nam (as of 2000) and Thailand (as of 2003).
(f) For calculation of regional sub-total for 2004 previous year's estimates were used.
(g) Based on the Afghanistan Opium Survey 2004, estimates of potential heroin production is 500 metric tons (mt) in Afghanistan. For other countries a 10:1 ratio is used for conversion from opium to heroin.

Fig. 1: Global opium poppy cultivation 1990-2004 (ha)

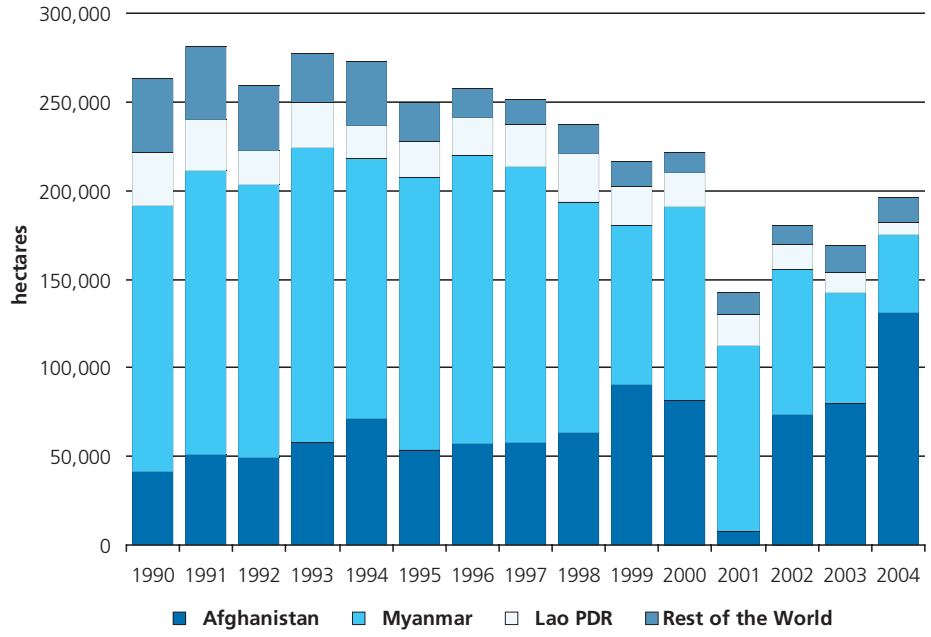
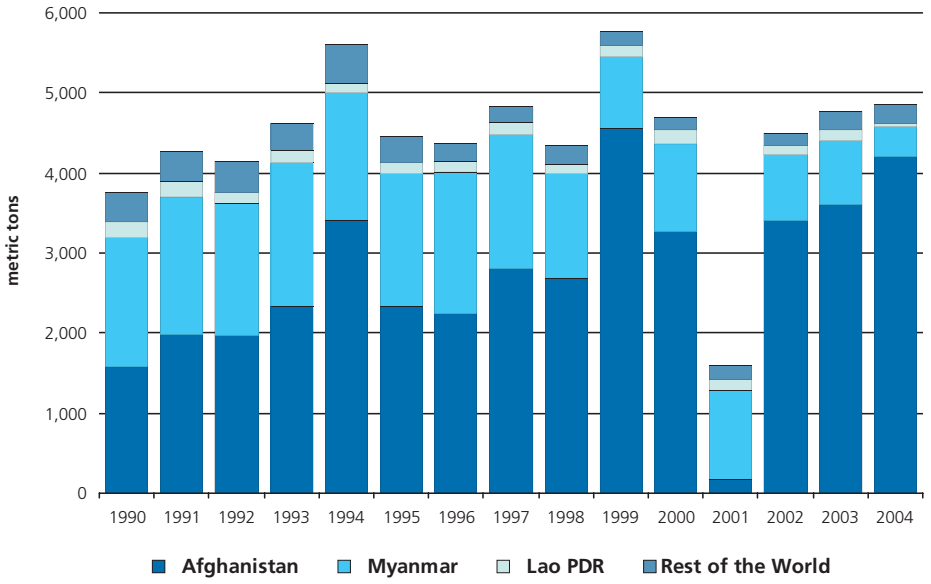
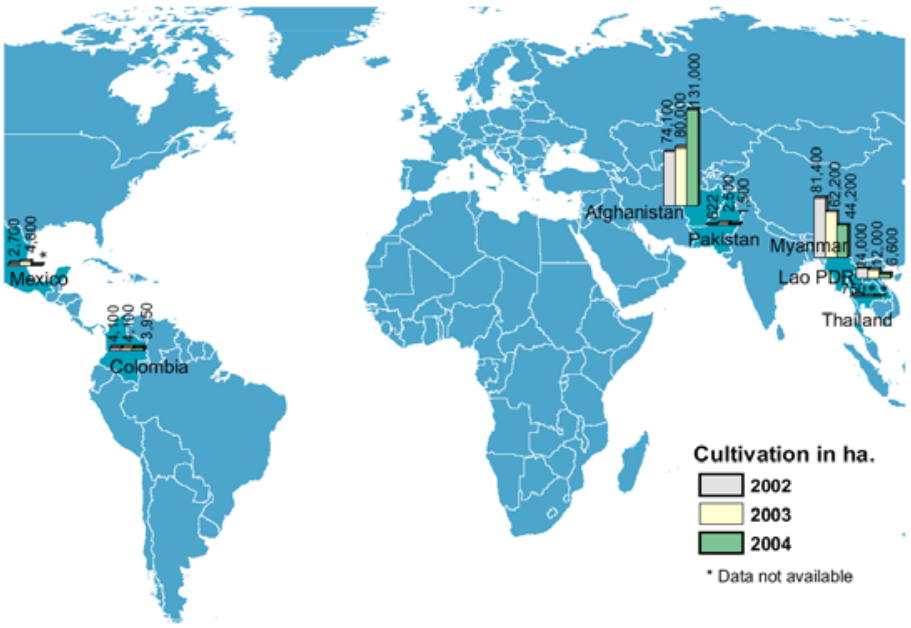


Fig. 2: Global opium production 1990-2004 (metric tons)



Map 1. Opium poppy cultivation (2002 - 2004)



Map 2. Opium production (2002 - 2004)

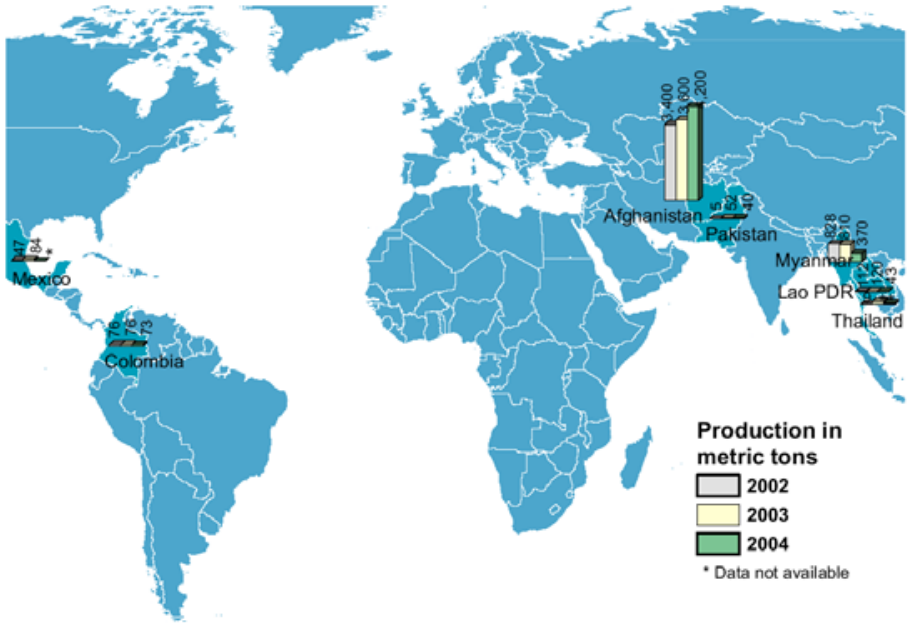


Fig. 3:
Annual opium poppy cultivation and opium production in main producing countries, 1990 - 2004

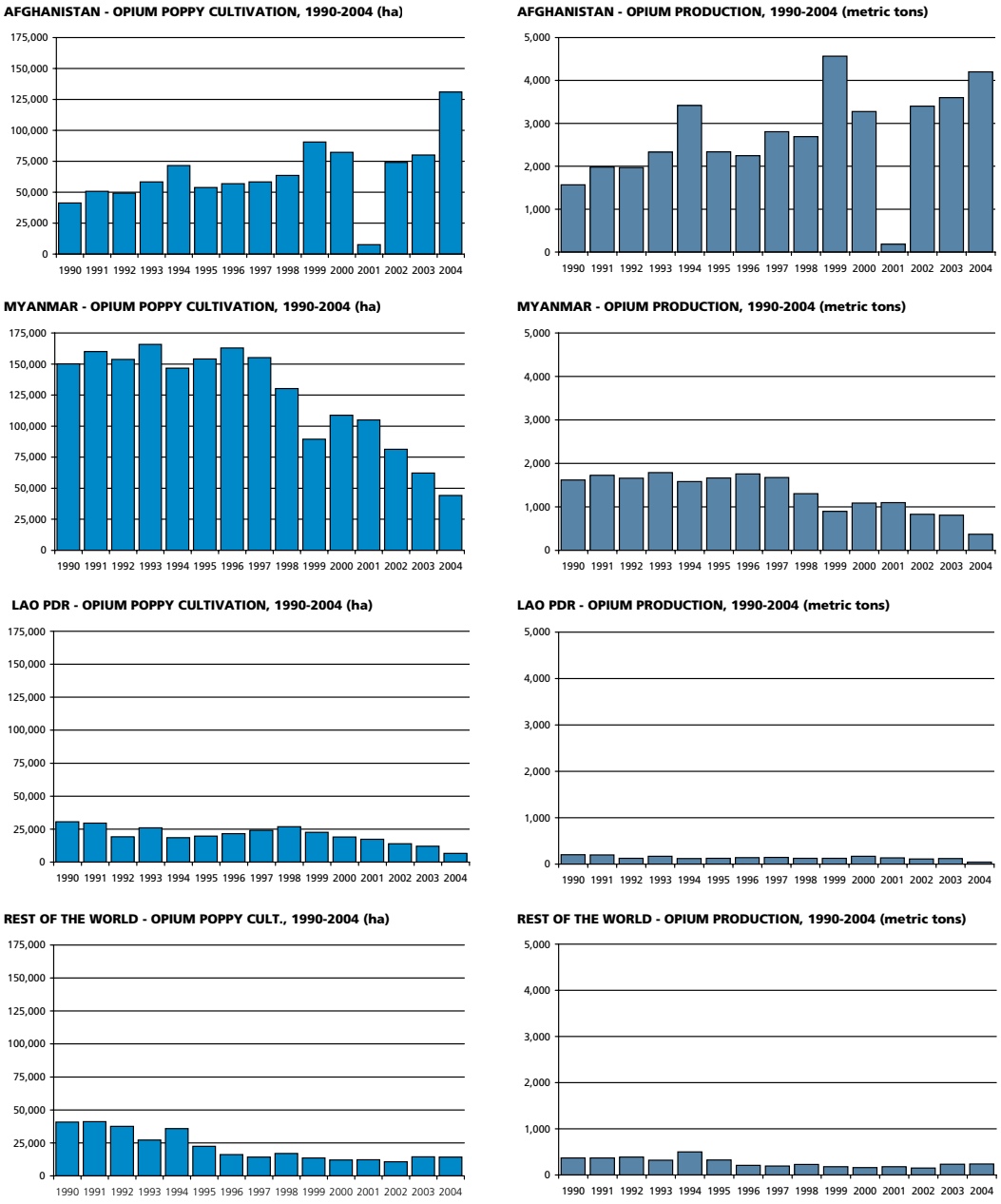
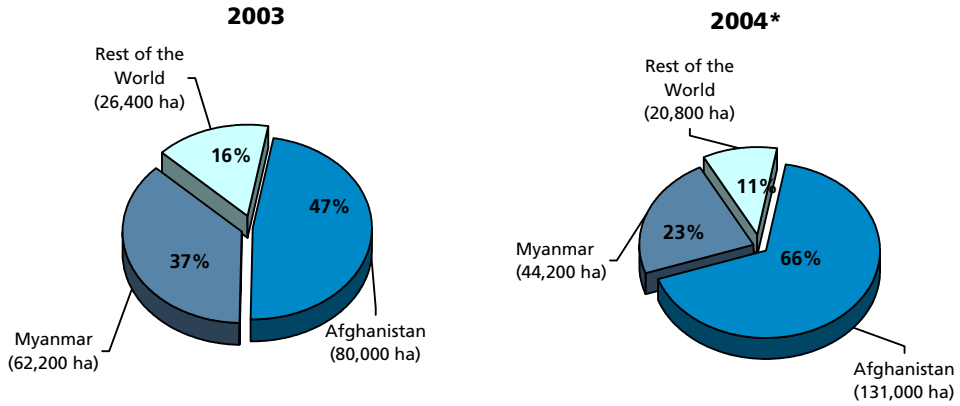
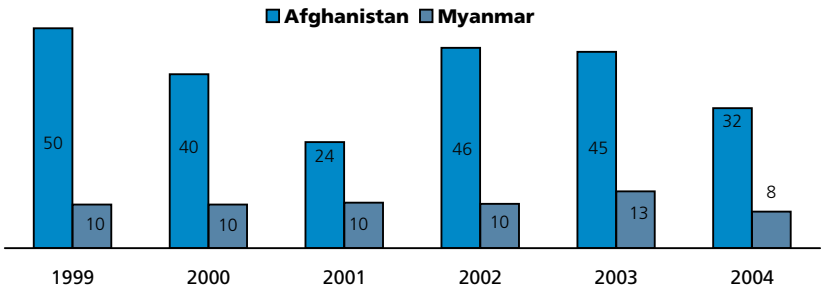


Fig. 4: Opium poppy cultivation



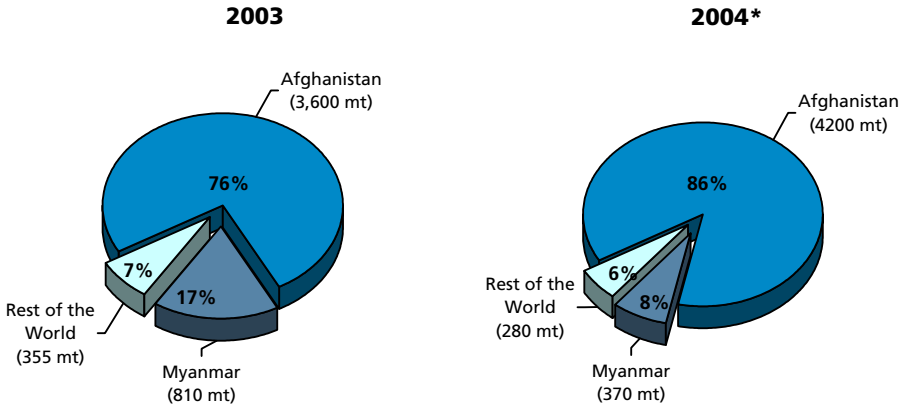
*Data for the 'rest of the world' is still tentative.

Fig. 5: Opium Yields in Afghanistan and Myanmar (kg/ha)



Differences in opium yield between Afghanistan and Myanmar are due to differences in opium poppy varieties and growing conditions. Variations of yields from year to year in the same country are mostly caused by changes in weather conditions and/or, as in the case of Afghanistan in 2001, by a shift in the relative distribution of cultivation from irrigated to rain-fed land.

Fig. 6: Opium production



*Data for the 'rest of the world' is still tentative.

Table 2. Estimated farmgate prices for potential opium, 2004

	Farmgate price US$ per kg	Production metric tons	Potential value (millions of US$)
Myanmar	234	370	87
Afghanistan	142	4,200	600
Lao, PDR	218	43	9
Colombia (1)	194	76	15
Mexico (1)	194 (2)	84	16
Other (1) (4)	196 (3)	103	20
Total opium		4,876	747

(1) Based on 2002 opium prices and calculated with 2003 production data.

(2) Farmgate price not available: value based on price in Colombia

(3) Average price based on the total value and production from the five countries listed above.

(4) Includes countries such as Pakistan, Central Asia, Russia, Ukraine, Caucasus region, Viet Nam, Thailand, Egypt and Peru.

Fig. 7: Potential farmgate value of opium, 2004 (millions of US$)

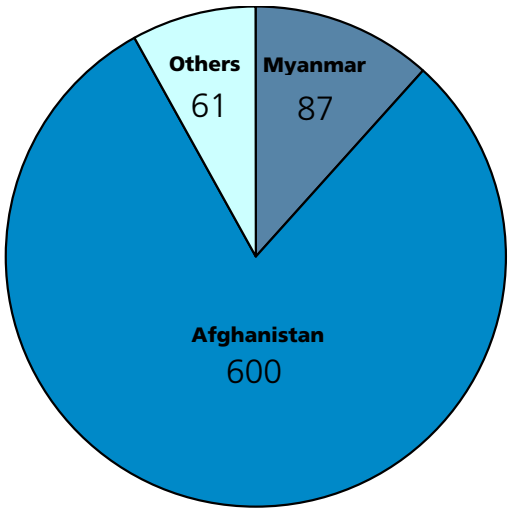
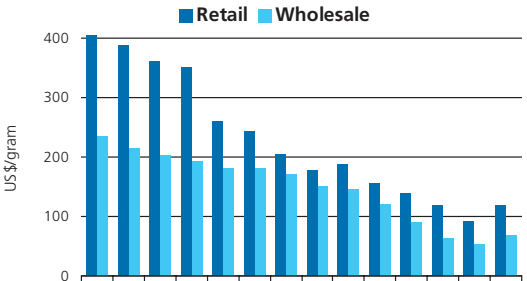
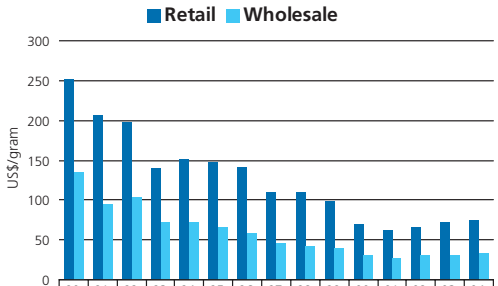


Fig. 8: USA: heroin retail and wholesale prices, 1990-2003 (US$/gram)



	90	91	92	93	94	95	96	97	98	99	00	01	02	03
Retail	407	387	361	351	259	243	205	178	188	155	139	117	92	119
Wholesale	235	215	202	191	182	181	171	152	145	121	89	63	53	67

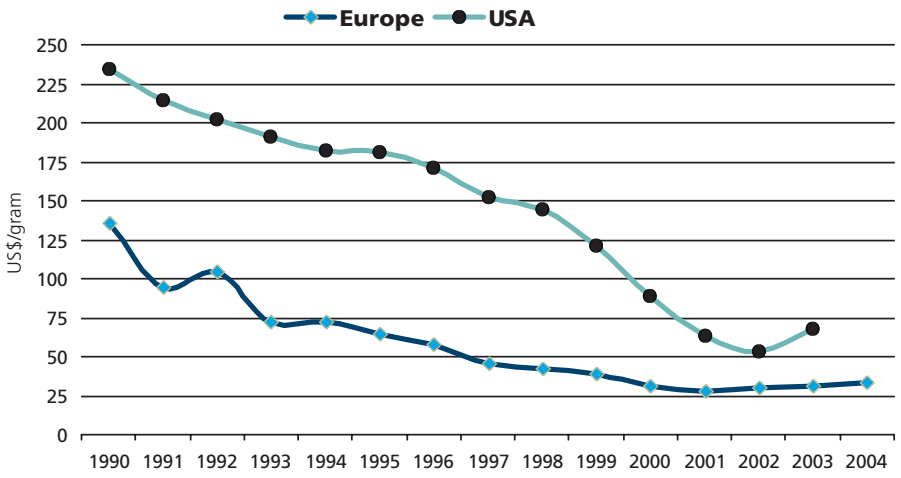
Fig. 9: Europe: heroin retail and wholesale prices, 1990-2004 (US$/gram)



	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04
Retail	251	207	198	140	151	148	142	110	109	98	70	63	66	72	75
Wholesale	136	95	104	72	72	65	58	46	42	39	31	28	30	31	33

* premilinary data for 2003.
Note: Retail and wholesale prices are not directly comparable because purity levels differ.

Fig. 10: Wholesale heroin prices in Europe and the USA, 1990-2004 (US$/gm, at street purity)



* preliminary data for 2003

Table 3. Reported opium poppy eradication, in ha, 1993 - 2004

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Afghanistan							400	121			21,430	
Colombia	9,400	5,314	5,074	7,412	7,333	3,077	8,434	9,279	2,583	3,371	2,994	3865
Lao PDR											4,134	3,556
Mexico	13,015	10,959	15,389	14,671	17,732	17,449	15,461	15,717	15,350	19,157	20,034	
Myanmar	160	1,041	3,310	1,938	3,093	3,172	9,824	1,643	9,317	7,469	638	2,820
Pakistan	856	463		867	654	2,194	1,197	1,704	1,484	n.a.	4,185	5200
Thailand	1,706	1,313	580	886	1,053	716	808	757	832	507	767	
Vietnam		672	477	1,142	340	439		426			n.a.	32.47

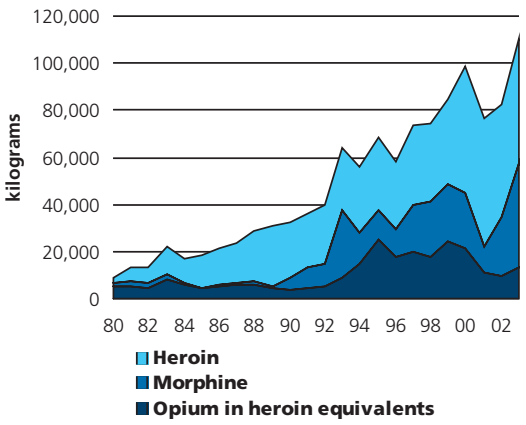
1.2.2 Trafficking

Opiates seizures reached a record high in 2003…

Global seizures of opiates[7] in 2003 reached 110 mt, a record high and an increase of 33% as compared to a year earlier. The large increase in seizures is thought to reflect higher rates of opiate production and trafficking as well as improved law enforcement activities, notably in the countries surrounding Afghanistan. The interception rate, i.e. seizures of opiates expressed as a percentage of global illicit production, increased to 23% in 2003, up from 18% in 2002 and 14% in 1993.

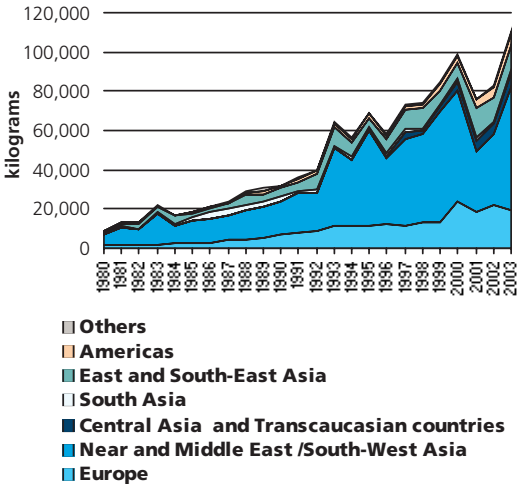
Interestingly, the increase in seizures was more pronounced for morphine and opium than for heroin, reflecting improved enforcement activities in and around the main producer countries. Broken down by substance, opium seizures increased in 2003 by 38% to 134 mt (or 13.4 mt in heroin equivalents)[8], morphine seizures increased by 77% to 43.7 mt and heroin seizures increased by 10% to 53.3 mt.

Fig. 11: Seizures of opiates (in heroin equivalents)[7], 1980-2003



Source: UNODC, Annual Reports questionnaire Data/DELTA.

Fig. 12: Seizures of opiates (in heroin equivalents)[7], 1980-2003



Source: UNODC, Annual Reports questionnaire Data/DELTA.

…with seizures having risen particularly in and around Afghanistan, the world's largest opium producer…

The countries reporting the largest total opiates seizures[9] for 2003 were Pakistan (34.7 mt) and the Islamic Republic of Iran (26.1 mt) — equivalent to 31% and 24% of global opiate seizures respectively. Encouragingly, the growth of seizures in countries

[7] Opium, morphine and heroin, expressed in heroin equivalents using a 10 : 1 ratio for opium to heroin (i.e. 10 kg opium for the manufacture of 1 kg of heroin) and a 1:1 conversion rate for morphine to heroin.

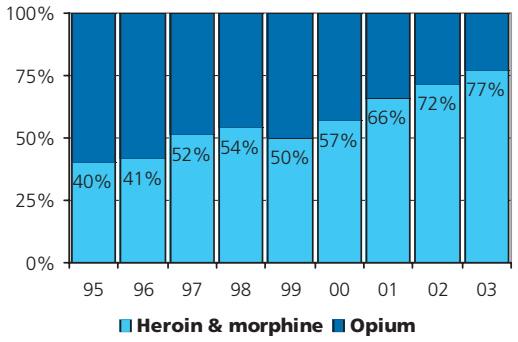
[8] Using a 10 : 1 ratio for opium to heroin.

[9] In heroin equivalents.

neighbouring Afghanistan was stronger than the growth of Afghanistan's opium production in 2003. Opiates seizures rose in the Near and Middle East/South-West Asia region (which includes Iran, Pakistan and Afghanistan) by 75% in 2003 to 62.9 mt (57% of global opiates seizures). These were the highest opiates seizures ever recorded in this sub-region. Seizures in Central Asia rose by 33% in 2003 to 7.1 mt. Most of the opiates trafficked via Central Asia are destined for the Russian Federation and other CIS countries.

UNODC's 2004 Afghanistan Opium Survey revealed that of Afghanistan's total opiates exports (500 mt of morphine and heroin and close to 1000 mt of opium), about a quarter are being shipped abroad via Central Asia (30% of heroin and morphine exports); the bulk, however, are still exported via Pakistan and Iran to Turkey (directly or via Iraq). The analysis of seizure data in these regions suggests that processing of opium to end products in Afghanistan increased over the last few years, with the trend towards seizing semi-processed (morphine) or end products (heroin) continuing in countries surrounding Afghanistan. UNODC's 2004 Afghanistan Opium Survey showed that 77% of all opiates seizures in the sub-regions surrounding Afghanistan (South-West and Central Asia) are already in the form of either morphine or heroin, up from 40% in 1995.

Fig. 13: Proportion of heroin and morphine in opiates seizures in South-West and Central Asia*, 1995-2003



* using a 6.5:1 conversion ratio of opium to heroin and a 1:1 conversion ratio for morphine to heroin.

Source: UNODC, 2004 Afghanistan Opium Survey; UNODC, Annual Reports Questionnaire Data / DELTA

…and temporarily declined in Europe.

In Europe, in stark contrast to South-West and Central Asia, seizures declined by 13% to 19.4 mt in 2003. Seizures declined both in Western and Central Europe (-11%) and along the Balkan route (-35% as compared to 2002; though up by 12% as compared to 2001). The largest opiate seizures in Western and Central Europe over the last few years have been reported by the UK and Italy, Europe's largest opiate markets.

Heroin prices in Western Europe have continued falling slightly in euro-terms (from €69 per gram in 2001 to €63 in 2002 and €60 in 2003), suggesting that there is no shortage in the availability of heroin. In economic terms, Western and Central Europe continues to be the world's most lucrative heroin market. The continent's overall heroin market (see the market model presented in Chapter 2) is estimated to amount to some 170 mt of which about half is used in Western and Central Europe.

Preliminary data for 2004 suggest that seizures along the Balkan route, through which the bulk of opiates destined for Western Europe continue to be smuggled, increased again. This was primarily the result of successes by the Turkish authorities. In 2003, Turkey's overall opiate seizures[10] amounted to 5.7 mt, representing 5% of global seizures or 30% of all European opiate seizures. In 2004, opiate seizures in Turkey increased by almost 160% to 14.7 mt. Since 1987, Turkey has accounted for Europe's largest opiate seizures.

Criminal groups of Turkish/Kurdish origins continue playing a significant role in wholesale shipments of opiates from Turkey to re-distribution centers across Western Europe.[11] In recent years criminal groups of Albanian origins (based in Kosovo, FYR of Macedonia and Albania) have gained in importance and various other criminal groups from other Balkan countries also participate in this business. Much of the retail trade in Western Europe, however, is now in the hands of criminal groups of West African origin.

10 In heroin equivalents.

11 HONLEA Meeting, Vienna, February 2005.

In East Europe (defined as the CIS countries), opiates seizures continued to rise strongly in 2003 (+78%). According to the Russian authorities, 85% of opiates seized are for domestic use and 15% are intended for onward shipment to other European countries. For the time being not much evidence exists among West European enforcement agencies that opiates trafficked to CIS countries are actually reaching Western Europe; most of these opiates seem to remain within the CIS region for domestic consumption.

Seizures remained stable - at lower levels - in South-East Asia…

With opium production in Myanmar and Laos PDR continuing to decline, opiates seizures in South-East Asia (12.4 mt or 11% of global seizures) remained basically stable in 2003 (+4%). In contrast to South-West Asia, opiate seizures in South-East Asia, where heroin is refined close to source, are almost exclusively in the form of heroin. China reported the world's third largest total seizure of opiates (9.6 mt in 2003, or 9% of global seizures) after Pakistan and Iran, ahead of Tajikistan, Turkey and the Russian Federation, and accounted for 77% of all opiates seizures in East and South-East Asia. As almost all of this was heroin (9.5 mt), authorities in China made, for the third year in a row, the world's largest total heroin seizures (18% of the global total), ahead of Pakistan, Tajikistan and Turkey.

… but increased in the Americas.

The Americas account for 6% (6.4 mt), of global opiate seizures. In 2003, opiate seizures increased by 20% in the Americas, mainly reflecting increases in Central America (+97%) and in North America (+33%). Seizures in South America, in contrast, declined (-8%). The main heroin trafficking flows within the Americas are from Mexico and Colombia to the USA. The largest opiate seizures in the Americas are made in the USA (2% of global seizures), followed by Mexico and Colombia. The US authorities also name Venezuela and Panama as important transhipment locations.

Map 3. Seizures of opium in Asia in 2003 (only highest ranking countries represented)

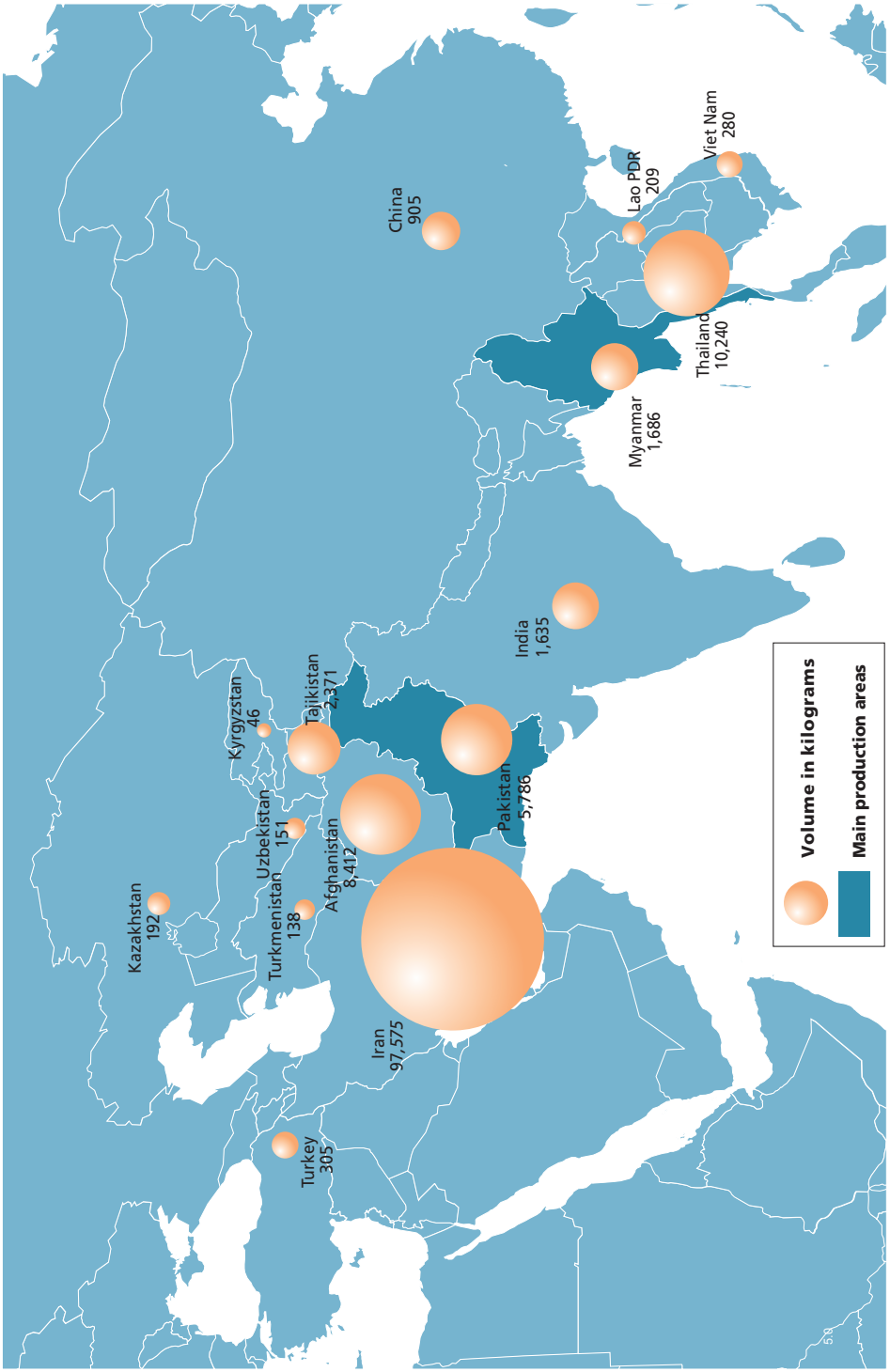


Fig. 14: Global illicit supply of opiates, 1993 - 2003

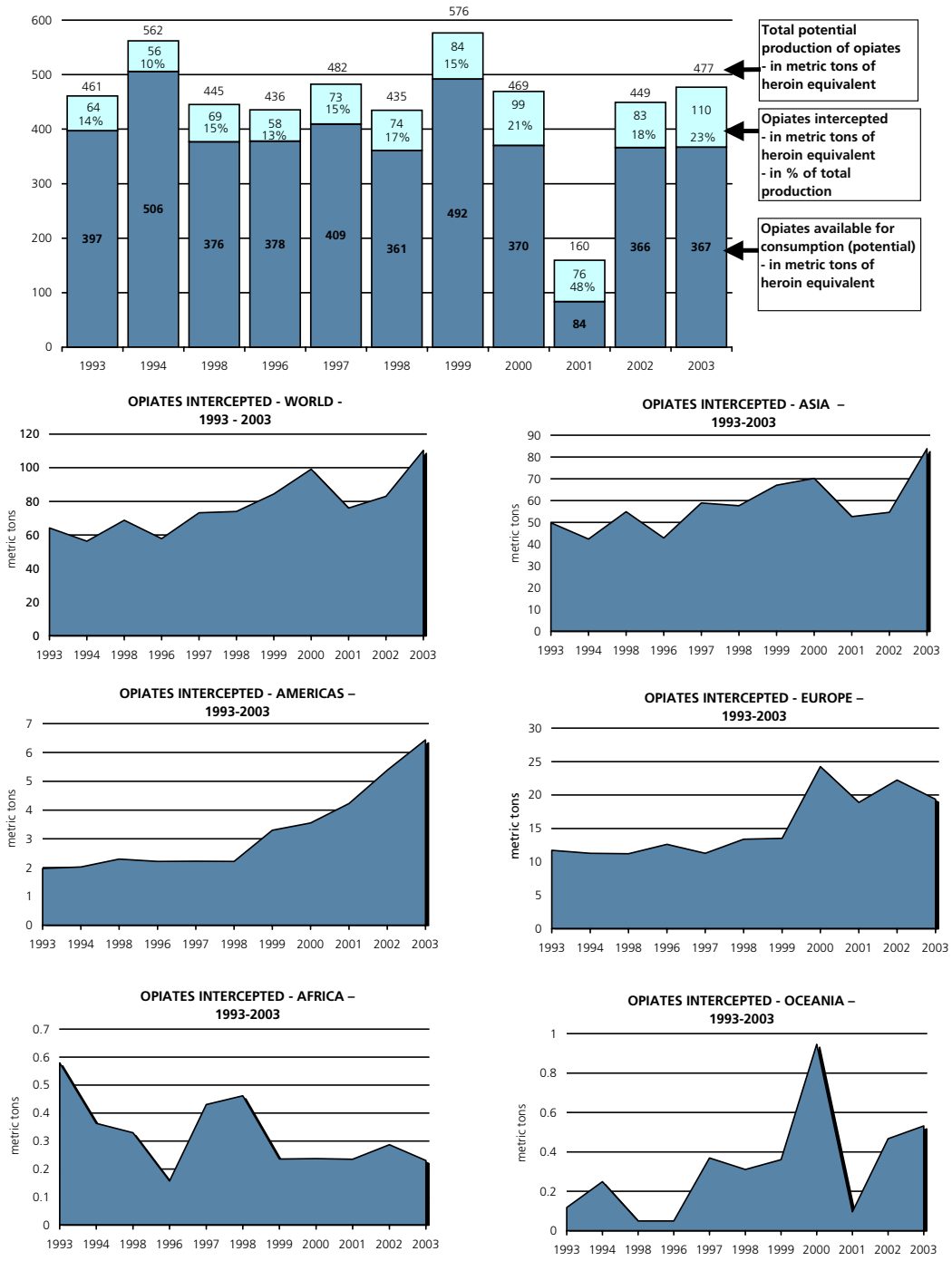
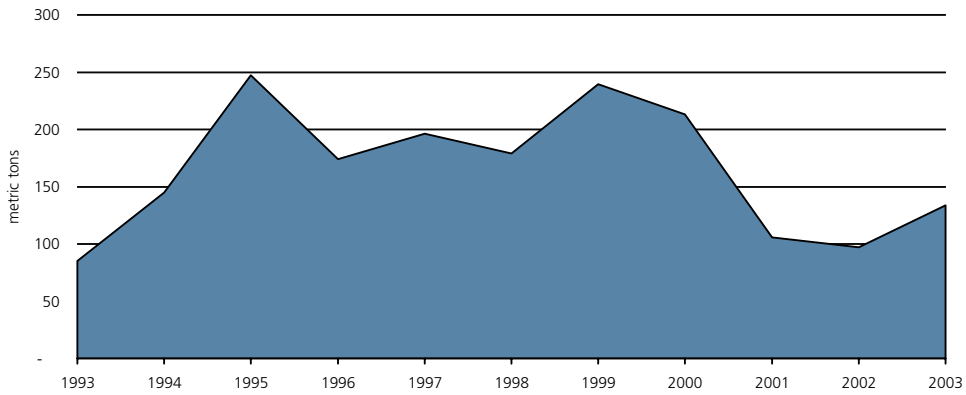


Fig. 15: Global seizures of opium, 1993 - 2003



Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Metric tons	85	145	247	174	196	179	239	213	106	97	134

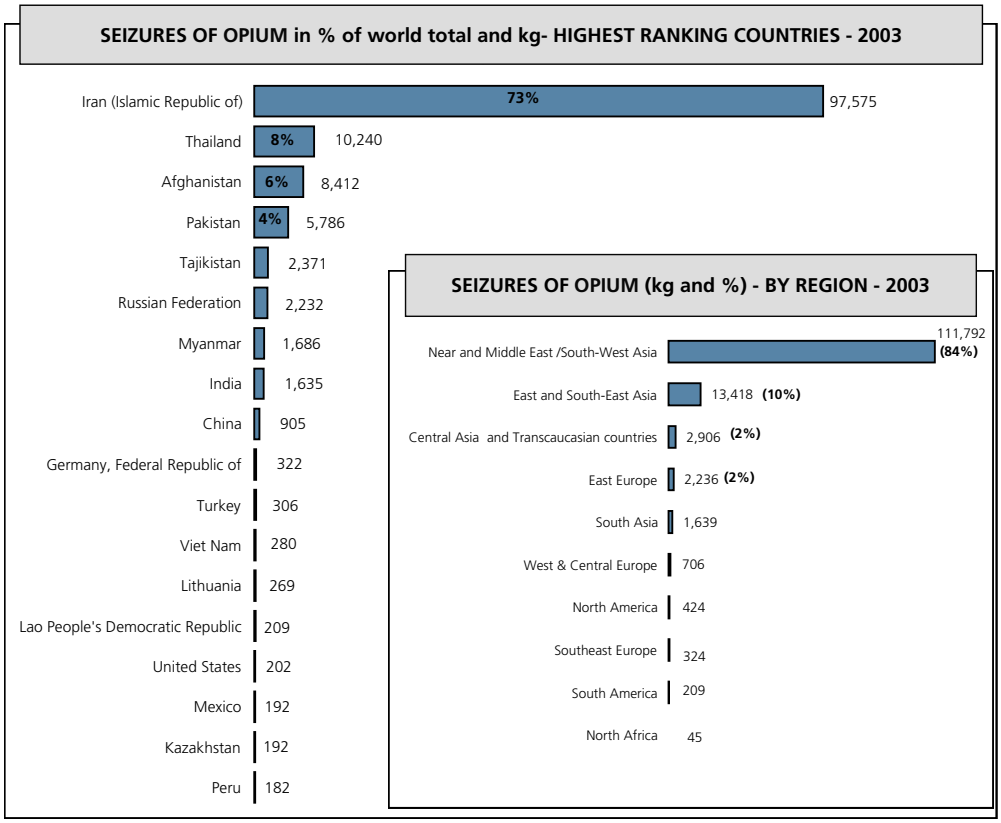
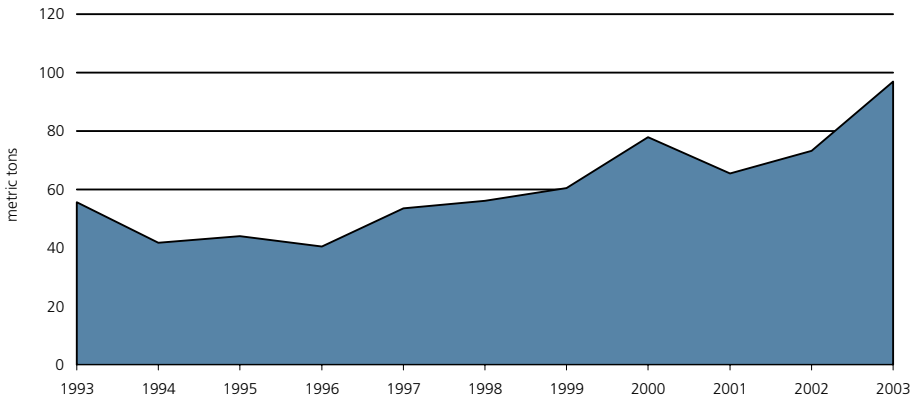
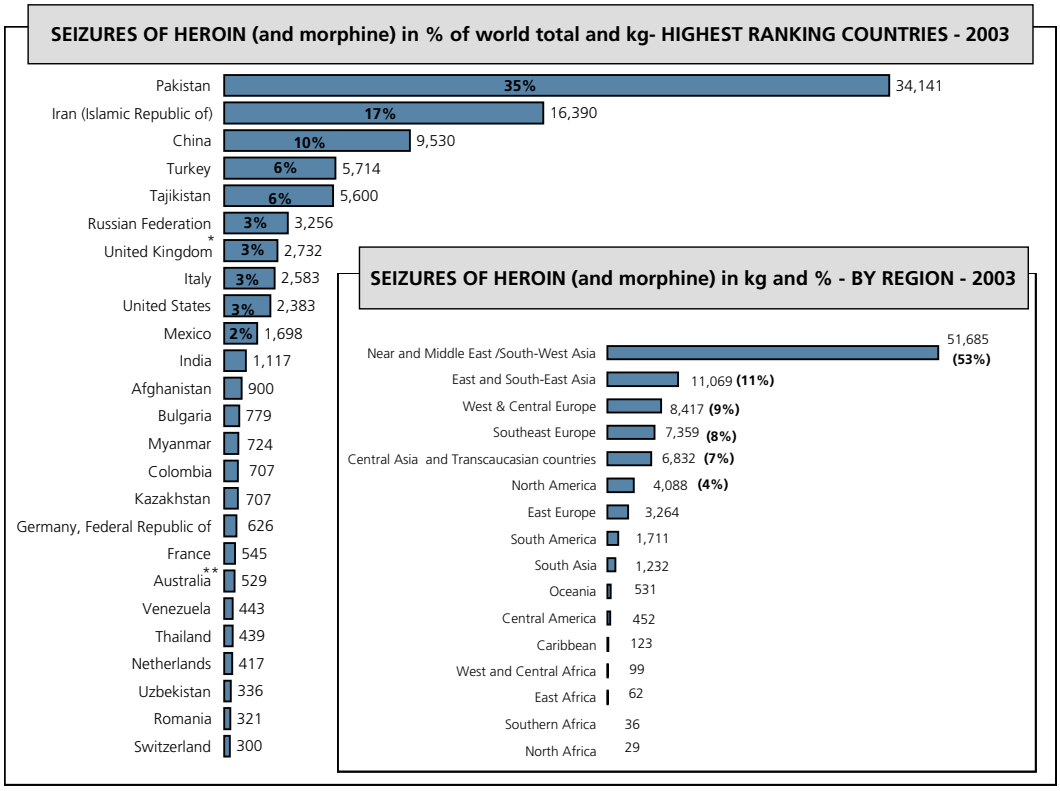


Fig. 16: Global seizures of heroin and morphine, 1993 - 2003



* metric ton equivalents. 1 kilogram of morphine is assumed to be 1 kilogram of heroin.

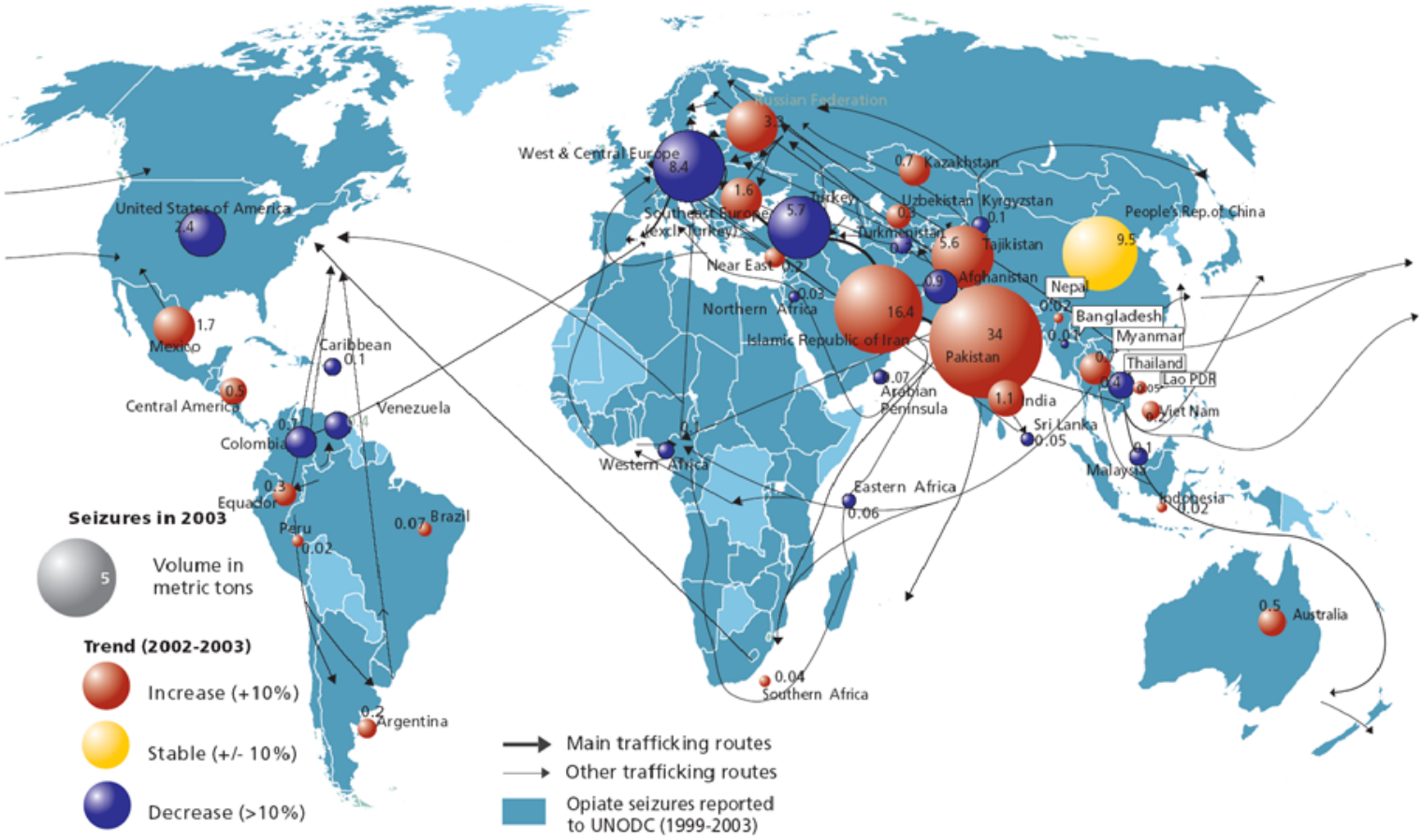
Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Metric tons	56	42	44	40	54	56	61	78	65	73	97



* data refer to 2002

** total seizures reported by national as well as State & Territory law enforcement agencies which may result in double counting.

Map 4: Heroin and morphine seizures 2002 - 2003 : extent and trends (countries reporting seizures of more than 0.01 mt (10 kg.))



Note: Routes shown are not necessarily documented actual routes, but are rather general indications of the directions of illicit drug flows.

1.2.3 Abuse

The extent of opiates abuse remains broadly stable…

A total of 16 million people worldwide abuse opiates. This is 0.4% of the population age 15-64 and includes some 10.6 million people who abuse heroin (0.3% of the adult population). Opiates, notably heroin, continue to be the main problem drugs in the world. More people (1.3 million) are treated for opiates abuse than for any other substance. Over 60% of drug related treatment demand in Europe and in Asia is related to the abuse of opiates. Out of 1000 opiate (opium, morphine and heroin) users, 78 people worldwide are in treatment for opiate abuse and 2.6 die per year, the highest such ratios for any kind of substance.

More than half of the world's total opiates abusing population is in Asia (8.5 million people) and all indications are that abuse is increasing in this region. In a number of Asian countries, opiates are reported to be the most or secondmost widely consumed drug. The countries with the highest levels of opiate abuse are found in Asia, notably along routes where the drugs are trafficked out of Afghanistan (Iran and Kyrgyzstan).

…with the highest prevalence rate found in Europe…

The highest regional prevalence rate, however, is found in Europe (0.8%), and the highest levels of opiates abuse can be found in East Europe (notably in the Russian Federation). The number of heroin users in West and Central Europe is estimated at 1.5 million or 0.5% of the population age 15-64. The UK and Italy continue to report high levels of abuse.

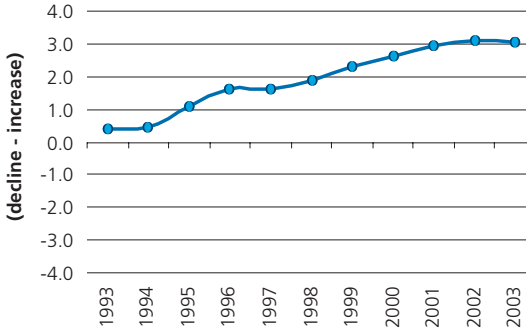
Abuse of heroin in the Americas is concentrated in the USA. Heroin abuse continues to be minimal in South America, where abuse of opiates is largely limited to diverted pharmaceutical preparations.

Heroin abuse in the Oceania region, which a few years ago was among the highest in the world, is now near the average. This reflects primarily the success of Australia in substantially lowering heroin abuse following the heroin shortage in 2001.

…despite some worrying increases linked to the increase in Afghan supply.

Overall, global trends in opiate abuse were broadly stable in 2003. According to regional experts abuse decreased in several countries of South-East Asia, Australia, and East Europe and was stable in West and Central Europe and in North America. Abuse rose in Central Asia, the Near and Middle East/South-West Asia, South-East Europe, as well as in Eastern and Southern Africa. Almost all of these increases can be linked to the re-emergence of large-scale opium production in Afghanistan.

Fig. 17: Drug Use Trend Index - Opiates based on expert opinions (weighted by estimated number of opiate users), 1993-2003



Source: UNODC, Annual Reports questionnaire Data/DELTA.

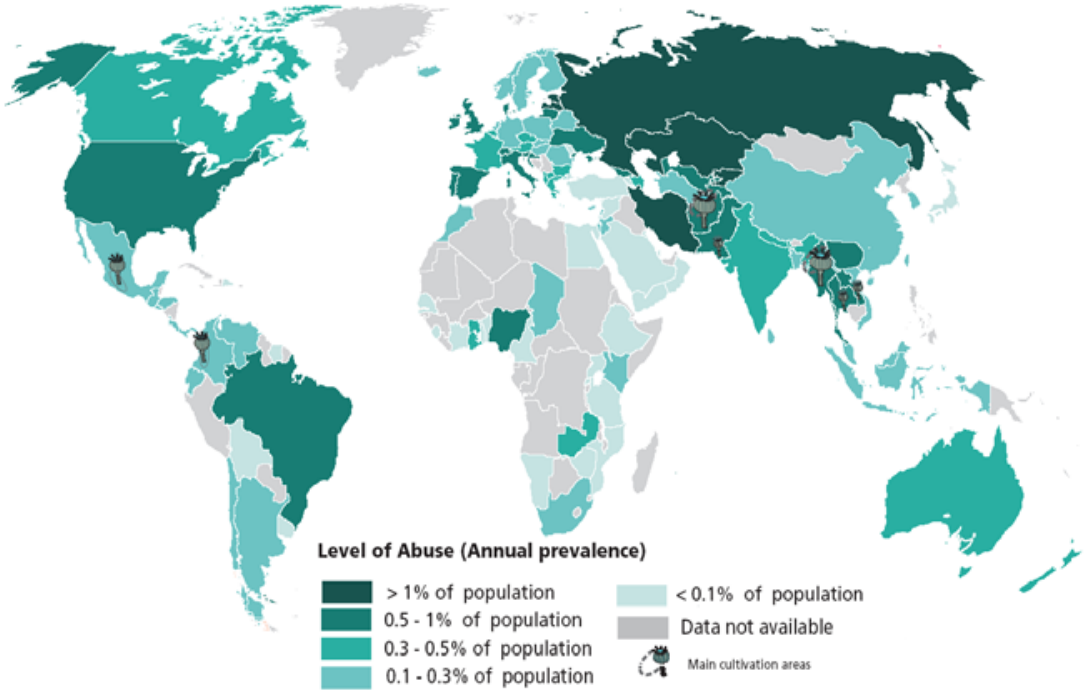
Table 4. Annual prevalence of opiate abuse, 2002-2004

	Abuse of opiates		of which abuse of heroin	
	Number of abusers	in % of population age 15-64	Number of abusers	in % of population age 15-64
EUROPE	4,200,000	0.8	2,920,000	0.5
West & Central Europe	1,600,000	0.5	1,500,000	0.5
South-East Europe	180,000	0.2	200,000	0.2
Eastern Europe	2,420,000	1.7	1,200,000	0.8
AMERICAS	2,350,000	0.4	1,560,000	0.3
North America	1,300,000	0.5	1,240,000	0.4
South America	1,050,000	0.4	320,000	0.1
ASIA	8,480,000	0.3	5,290,000	0.2
OCEANIA	90,000	0.4	30,000	0.2
AFRICA	820,000	0.2	810,000	0.2
GLOBAL	**15,940,000**	**0.4**	**10,610,000**	**0.3**

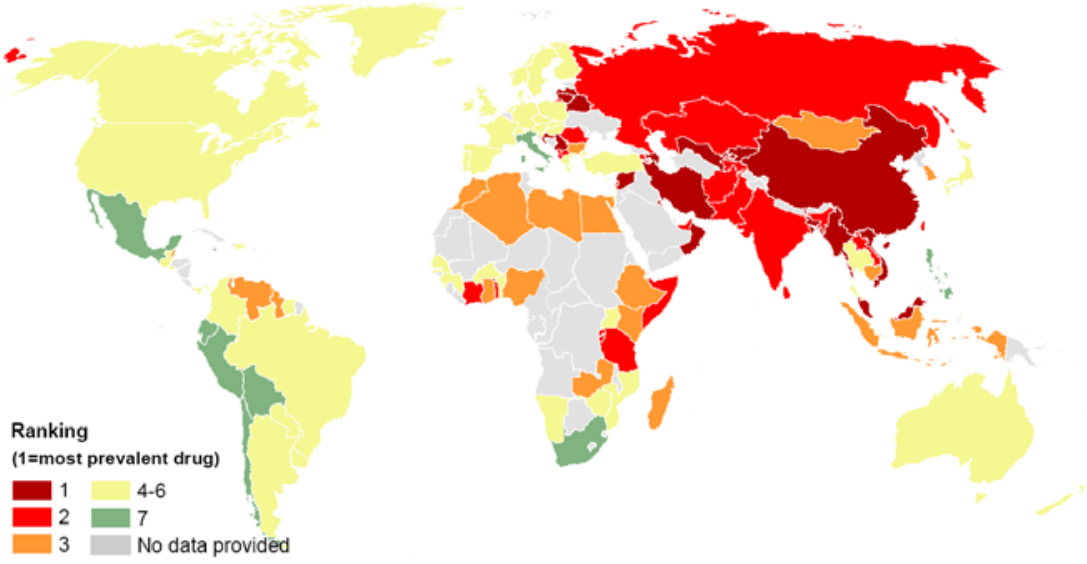
Above global average
Around global average
Below global average

Sources: UNODC, Annual Reports Questionnaire data, various Govt. reports, reports of regional bodies, UNODC estimates.

Map 5: Abuse of opiates (including heroin) 2002 - 2004 (or latest year available)

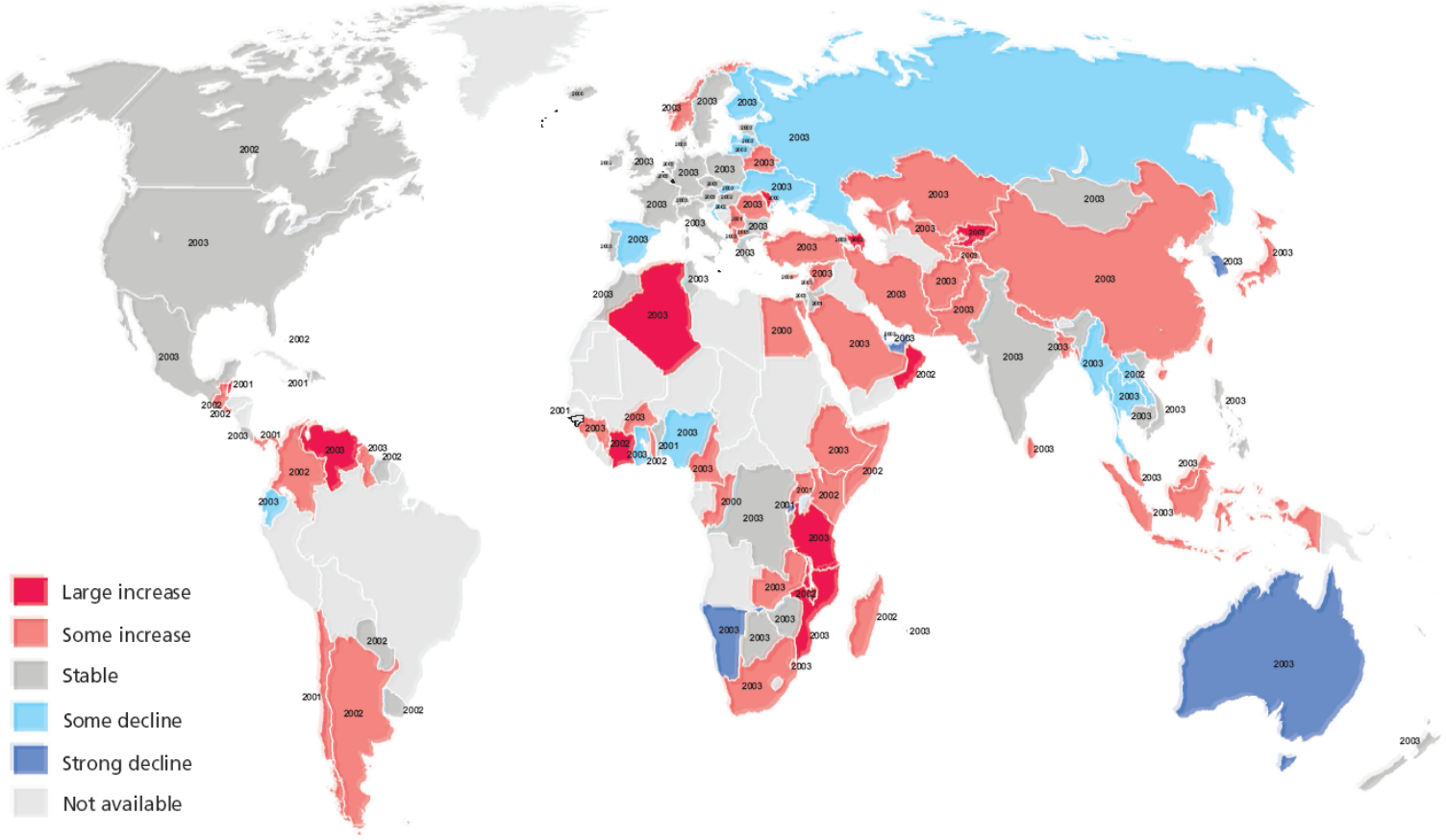


Map 6: Ranking of opiates in order of prevalence in 2003



Sources: UNODC Annual Reports Questionnaires data, SAMSHA US National Household Survey on Drug Abuse, Iranian Ministry of Health, Rapid Assessement Study and UNODC ARQ,Council of Europe, ESPAD.

Map 7: Change in abuse of heroin and other opiates, 2003 (or latest year available)



Sources: UNODC Annual Reports Questionnaires data, National Household Surveys submitted to UNODC, United States Department of State (Bureau for International Narcotics and Law Enforcement Affairs), International Narcotics Control Strategy Report, Law Enforcement Reports, SACENDU (South African Community Epidemiology Network, UNODC, Meetings of Heads of Law Enforcement Agencies (HONLEA), UNODC Opium Surveys.

1.3 Coca / Cocaine market

1.3.1 Production

Table 5. GLOBAL ILLICIT CULTIVATION OF COCA BUSH AND PRODUCTION OF COCA LEAF AND COCAINE, 1990-2004

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
CULTIVATION[a] OF COCA BUSH IN HECTARES															
Bolivia [b]	50,300	47,900	45,300	47,200	48,100	48,600	48,100	45,800	38,000	21,800	14,600	19,900	21,600	23,600	27,700
Colombia [c]	40,100	37,500	37,100	39,700	44,700	50,900	67,200	79,400	101,800	160,100	163,300	144,800	102,000	86,000	80,000
Peru [d]	121,300	120,800	129,100	108,800	108,600	115,300	94,400	68,800	51,000	38,700	43,400	46,200	46,700	44,200	50,300
Total	**211,700**	**206,200**	**211,500**	**195,700**	**201,400**	**214,800**	**209,700**	**194,000**	**190,800**	**220,600**	**221,300**	**210,900**	**170,300**	**153,800**	**158,000**
POTENTIAL PRODUCTION OF DRY COCA LEAF IN METRIC TONS															
Bolivia	77,000	78,000	80,300	84,400	89,800	85,000	75,100	70,100	52,900	22,800	13,400	20,200	19,800	18,500	25,000
Colombia	45,300	45,000	44,900	45,300	67,500	80,900	108,900	129,500	165,900	261,000	266,200	236,000	222,100	168,000	148,900
Peru	196,900	222,700	223,900	155,500	165,300	183,600	174,700	130,600	95,600	69,200	46,200	49,300	52,500	50,790	70,300
Total	**319,200**	**345,700**	**349,100**	**285,200**	**322,600**	**349,500**	**358,700**	**330,200**	**314,400**	**353,000**	**325,800**	**305,500**	**294,400**	**237,290**	**244,200**
POTENTIAL MANUFACTURE[e] OF COCAINE IN METRIC TONS															
Bolivia	189	220	225	240	255	240	215	200	150	70	43	60	60	79	107
Colombia	92	88	91	119	201	230	300	350	435	680	695	617	580	440	390
Peru	492	525	550	410	435	460	435	325	240	175	141	150	160	155	190
Total	**774**	**833**	**866**	**769**	**891**	**930**	**950**	**875**	**825**	**925**	**879**	**827**	**800**	**674**	**687**

(a) Harvestable after eradication
(b) Sources: 1990-2002: CICAD and US Department of State, International Narcotics Control Strategy Report; 2003-2004: National Illicit Crop Monitoring System supported by UNODC.
(c) Sources: 1990-1998: CICAD and US Department of State, International Narcotics Control Strategy Report; 1999-2004: National Illicit Crop Monitoring System supported by UNODC.
(d) Sources: 1990-1999: CICAD and US Department of State, International Narcotics Control Strategy Report; 2000-2004: National Illicit Crop Monitoring System supported by UNODC.
(e) Amounts of cocaine that could be manufactured from locally produced coca leaf (due to imports and exports actual amounts of cocaine manufactured in a country can differ).

Global cultivation of coca is on the increase…

After three consecutive years of decline, global coca cultivation has increased slightly in 2004. The total area under coca cultivation in Colombia, Peru and Bolivia rose 3% to 158,000 ha. This is still 29% less than the peak of cultivation in 2000, but is a worrying reversal of the previous positive trend. The majority of all coca cultivation (50%) continues to take place in Colombia, followed by Peru (32%) and Bolivia (15%).

About 80,000 ha of coca were cultivated in Colombia in 2004, a year-on-year decline of 6,000 ha. The decrease of coca cultivation is consistent with the sustained level of aerial spraying and manual eradication that peaked at 139,200 ha in 2004. The continued implementation of alternative development projects also contributed to the success of the government's eradication efforts.

Unfortunately, the decline in Colombia was offset by increases in cultivation in both Bolivia and Peru. Cultivation in Bolivia increased 17% to 27,700 ha in 2004, reinforcing the rising trend of the past five years. In Peru cultivation rose 14% to 50,300 ha to its highest level since 1998.

…including in vital National Park regions and protected areas.

Coca cultivation continues to take place in areas that do not meet the ecological conditions for agriculture and should be protected or used exclusively for forestry activities. In Colombia, coca cultivation was found in 13 out of 50 National Parks. Coca cultivation in National Parks represented 7% of the total level of coca cultivation in 2004. A comparison of the location of the coca fields in 2003 and 2004 showed that about 60% of the coca fields were new, indicating the important mobility of this crop in Colombia. This trend is worrisome. In Bolivia, a total of 40% of the coca cultivation in the Chapare region (4,100 ha) was in two National Parks. In 2004, coca cultivation in these National Parks increased by 71%, to 4,100 ha. Similar developments were observed in Peru. In 2004, 24% of coca was cultivated in protected areas, including national parks and biosphere reserves. The most important increase in 2004 took place in the Alto Huallaga region, where 52% of cultivation was in protected and forest areas.

Sustained eradication activities continued in all three countries…

The Colombian anti-drugs strategy includes a number of measures ranging from aerial spraying to forced or voluntary manual eradication, and includes both alternative development and crop substitution programmes.[12] The Colombian Anti-Narcotics Police (DIRAN) reported that spraying activities reached record levels in 2004, for the fourth consecutive year. The DIRAN sprayed a total of 136,551 hectares, up 3% from 2003, and the Army manually eradicated 2,589 ha of coca.[13]

In 2004, the Bolivian Government reported the eradication of 8,437 ha of coca fields[14]. Most of this took place in the Chapare region. In 2004, the level of reported eradication was 16% less than in 2003. In 2004, the Peruvian government reported the eradication of 10,257 ha of coca fields, 10% less than in 2003. It was the third largest level of eradication since 1999.

…but alternative livelihood options need further investment.

The budget for alternative development projects implemented at the municipality and department levels in Colombia increased to US$78 million in 2004. Documenting the impact of this investment is not straightforward, and whereas the reductive effects of aerial spraying can be almost immediate, it takes longer to understand and assess the impact of alternative development. Aerial spraying and alternative development efforts were intense in Putumayo and Caqueta between 2000 and 2004, producing a decrease of about 80,000 ha of coca cultivation. However, between 2000 and 2004, coca cultivation increased in Nariño by about 5,000 ha, despite of intense aerial spraying and an

12 UNODC does not participate in or supervise spraying activities.

13 Once coca fields are sprayed, it normally takes 6-8 months to recover productive crops when the bushes are pruned or replanted. However, if heavy rains occur or if farmers wash the coca bushes immediately after spraying, the loss of coca leaf could be minimal.

14 In Bolivia, the eradication of coca cultivation is exclusively manual and no chemicals are used.

US$11million investment in alternative development. In Meta, coca cultivation increased by about 7,600 ha during the same period, due to some extent to the absence of alternative development projects and the low level of aerial spraying of coca cultivation.

Peru has had remarkable results with alternative livelihood programmes. In the 1990s, a large proportion of the total coca cultivation in the country was grown in Aguatya and Lower Huallaga. By 2004, following the successful implementation of many such programmes coca cultivation had virtually disappeared from both regions. Only 11% of Peruvian farmers dependent on coca have access to sustainable livelihood activities.

Bolivia can also point to numerous alternative livelihoods schemes that have reduced the dependence of rural economies on coca cultivation. However, these programmes still do not reach enough coca growers and far too many people remain dependent on coca. In Chapare, the focus of alternative development projects was the region defined by the Ministry as 'multiple use forest'. Between 2003 and 2004, coca cultivation remained stable in this region. In contrast, areas with little or no alternative development intervention showed an increase in coca cultivation between 2003 and 2004.

The high prices of coca leaf continue in Bolivia and Peru...

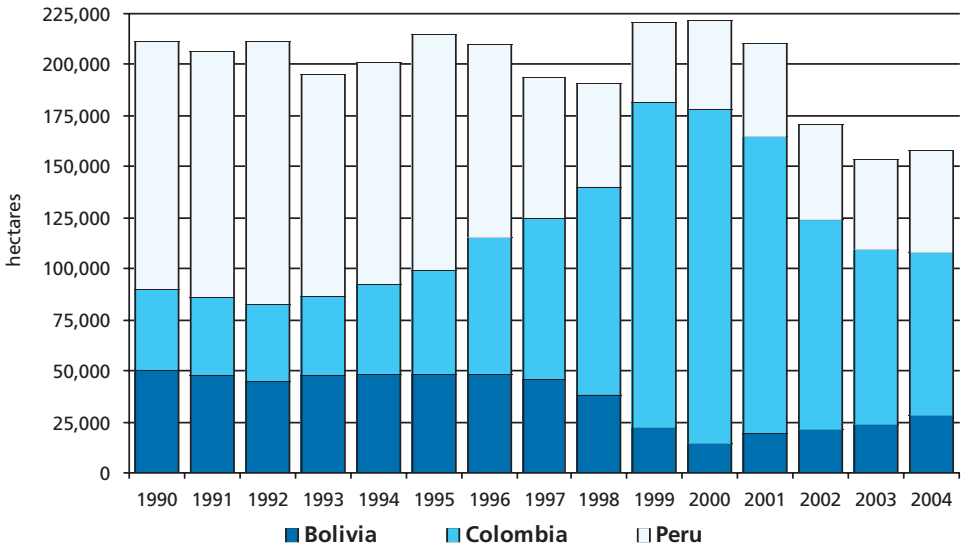
The sustained high price for coca leaf was the likely motivation for the farmers in Peru and Bolivia to increase coca cultivation in 2004. In Peru, the price has remained above US$ 2/kg since 2000, compared to prices below US$ 1/kg in 1996/1997. Prices in Bolivia are even higher at about US$ 5/kg, creating an incentive for smuggling Peruvian coca leaf into Bolivia. Bolivian authorities seized 27 metric tons of Peruvian coca leaves, out of a total of 155 metric tons.

Contrary to Bolivia and Peru, the market for coca leaf is not developed in Colombia because most farmers process the coca leaves into coca base. However, for the remainder who sold leaf, prices were much lower than in Peru and Bolivia, ranging between US$ 0.4/kg and US$ 1.8/kg. In 2004, the average price for one kg of coca base was about US$807. Although production decreased in Colombia in 2004, coca leaf prices did not increase. Compared to 2003, the prices even decreased in Colombian pesos. One possible explanation of this, still to be confirmed, is that the reduction of coca leaf production in Colombia was offset by imports of coca paste/base.

The total farm gate value of potential global coca base production was US$ 565 million in 2004.[15]

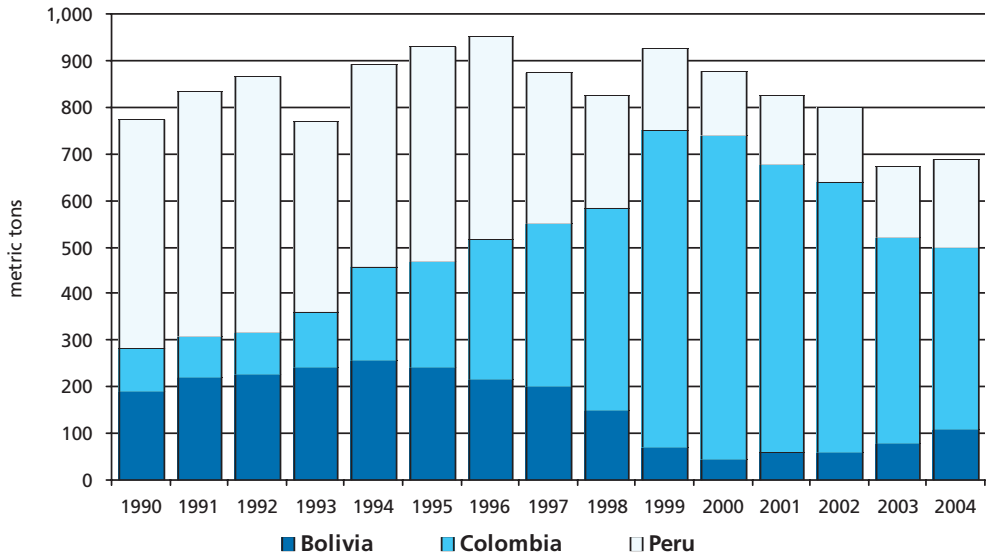
15 Using the average price for coca paste of US$ 80/kg in 2004 and assuming a 1:1 conversion rate between coca base and cocaine, the total farm-gate value of the 390 metric tons of coca base produced in Colombia in 2004 would amount to about US$315 million. In Peru, the potential production of cocaine was estimated at 190 metric tons. Using the 1:1 conversion rate between coca base and cocaine, the farm gate value of the potential coca base production was calculated at US$ 122 million. The potential cocaine production in Bolivia is estimated to have amounted to 107 metric tons in 2004, which corresponded to an increase of 35% compared to last year potential cocaine production of 79 metric tons. The farm gate value of potential coca base production in Bolivia would amount to US$ 128 million.

Fig. 18: Global coca bush cultivation, 1990-2004 (in ha)

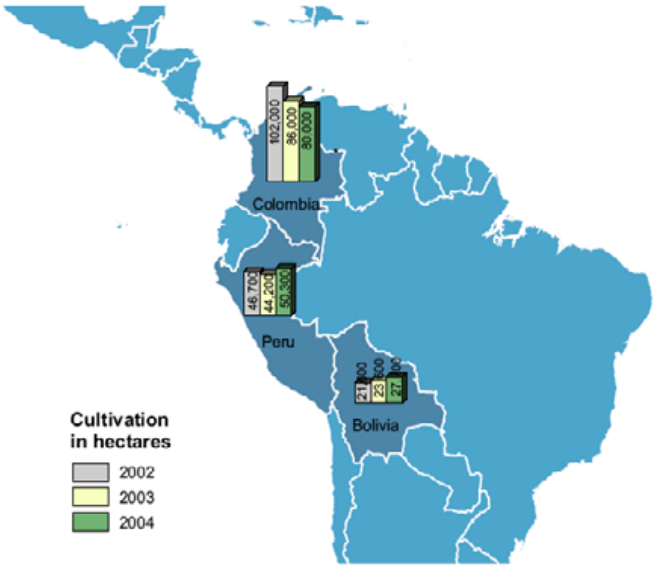


Estimates for Colombia for 1999 and subsequent years come from the national monitoring system established by the Colombian government with the support of UNODC. Due to the change of methodology, figures for 1999 and after cannot be directly compared with data from previous years.

Fig. 19: Potential cocaine production, 1990-2004 (metric tons)



Map 8. Coca bush cultivation (2002 - 2004)



Map 9. Potential cocaine production (2002 - 2004)

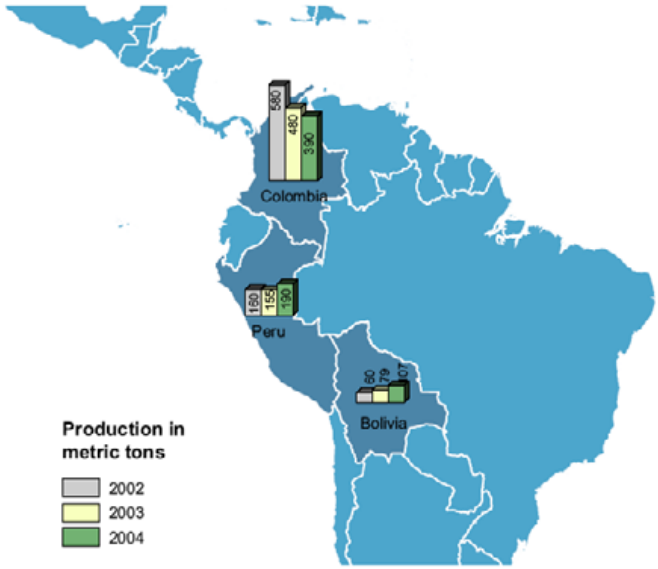
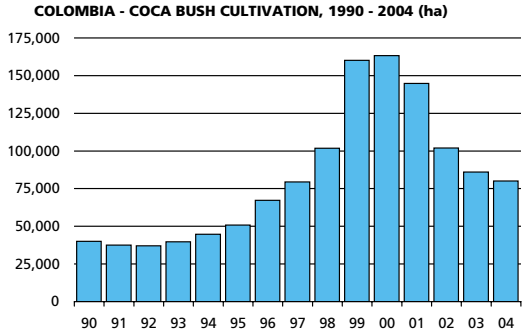
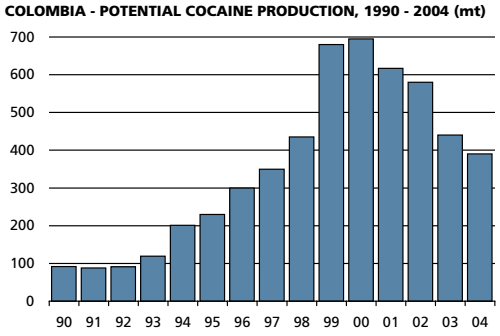
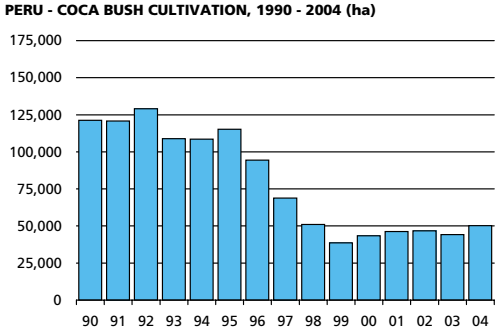


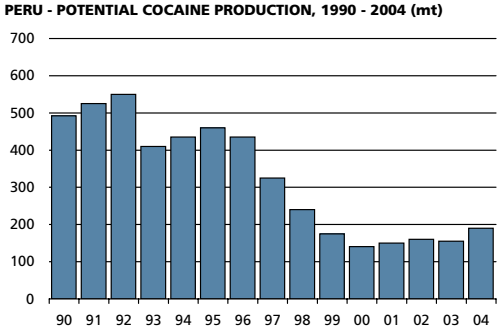
Fig. 20.
Annual coca bush cultivation and cocaine production in main producing countries, 1990 - 2004

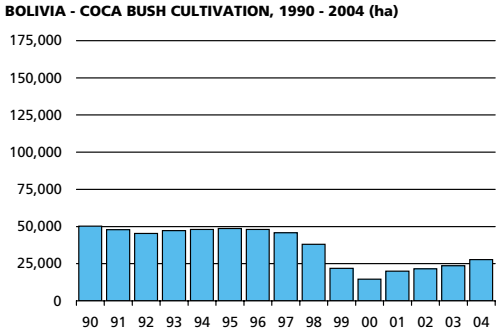




Estimates for Colombia for 1999 and subsequent years come from the national monitoring system established by the Colombian government with the support of UNDCP. Due to the change of methodology, figures for 1999 and after cannot be directly compared with data from previous years.







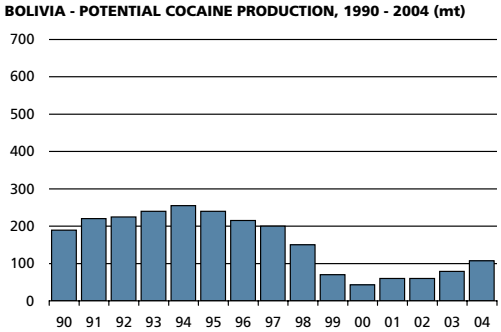


Fig. 21: Coca bush cultivation (in % of global total)

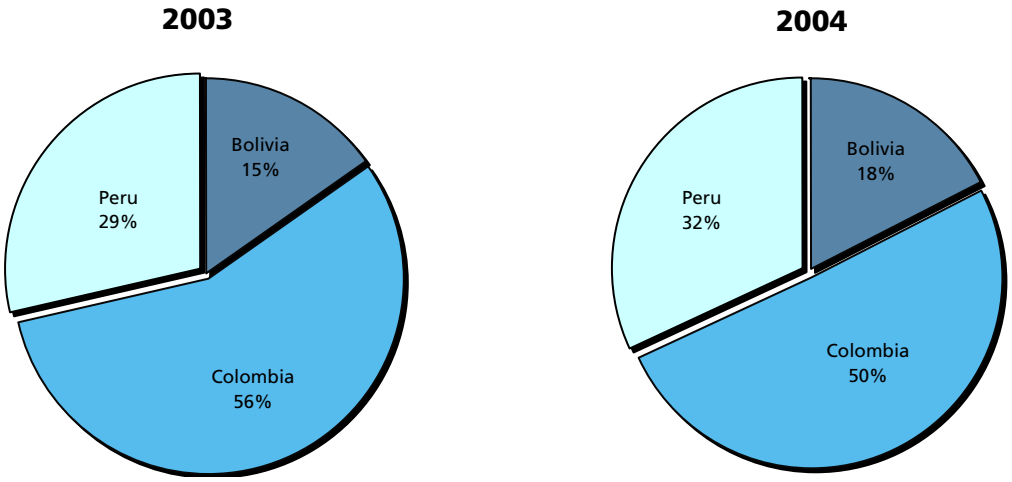


Fig. 22: Potential cocaine production (in % of global total)

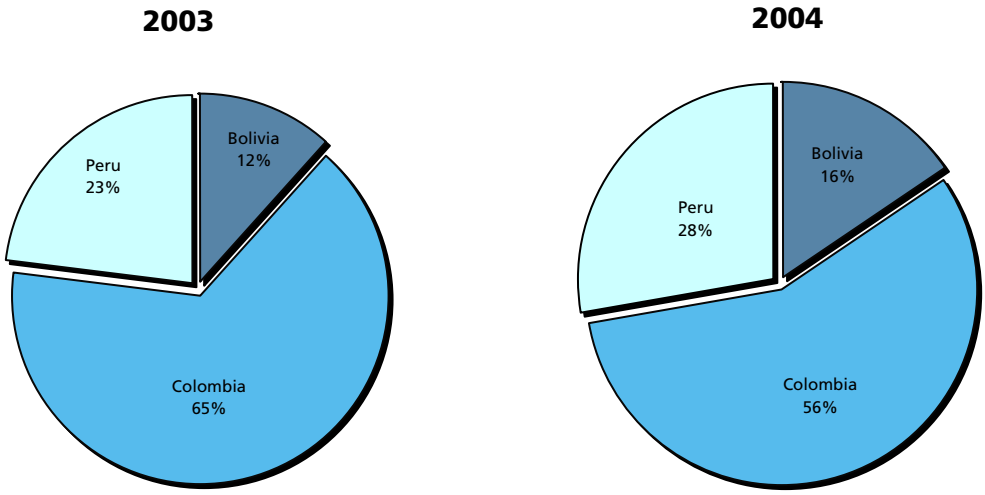


Table 5. Estimated farmgate value of coca base, 2004

	(UNODC estimates) **Farmgate price** US$ per kg	**Production** metric tons	**Potential value** millions of US$
Colombia	810	390	315
Peru	640	190	122
Bolivia	1,200	107	128

Fig. 23: Estimated farmgate value of coca base, 2004 (millions of US$)

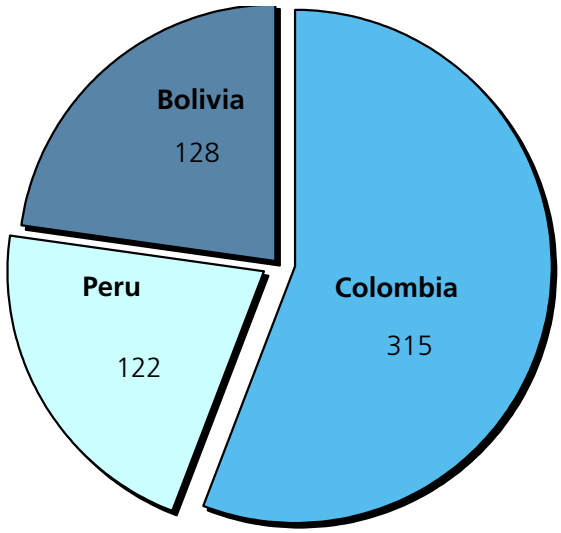
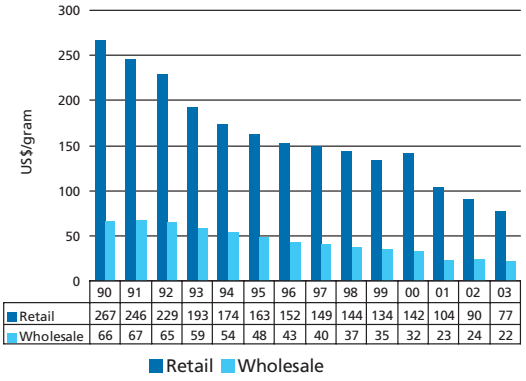
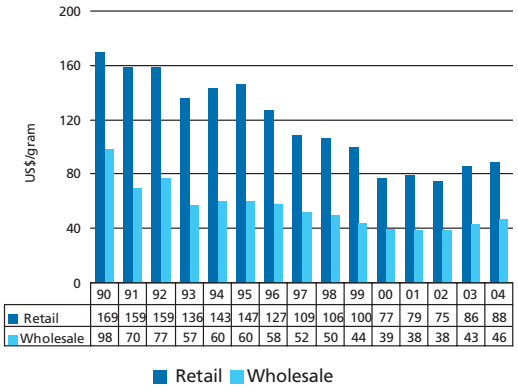


Fig. 24: USA: cocaine retail and whole sale prices, 1990-2003 (US$/gram)



	90	91	92	93	94	95	96	97	98	99	00	01	02	03
Retail	267	246	229	193	174	163	152	149	144	134	142	104	90	77
Wholesale	66	67	65	59	54	48	43	40	37	35	32	23	24	22

Fig. 25: Europe: cocaine retail and wholesale prices, 1990-2004 (US$/gram)



	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04
Retail	169	159	159	136	143	147	127	109	106	100	77	79	75	86	88
Wholesale	98	70	77	57	60	60	58	52	50	44	39	38	38	43	46

Fig. 26: Wholesale cocaine prices in Europe and the USA, 1990-2004 (US$/gram)

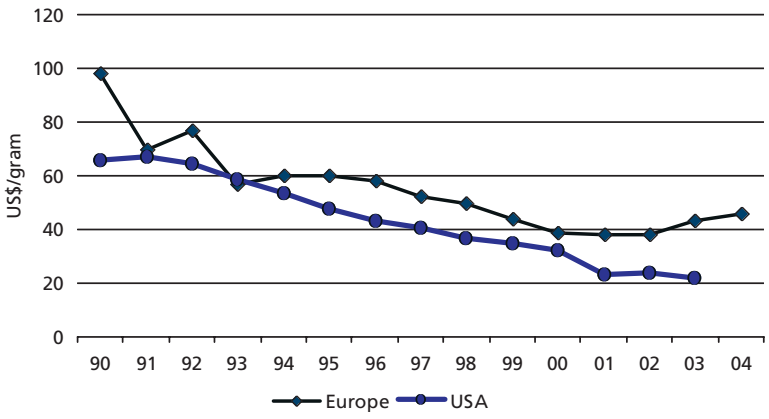


Table 7. Reported eradication of coca bush, in ha

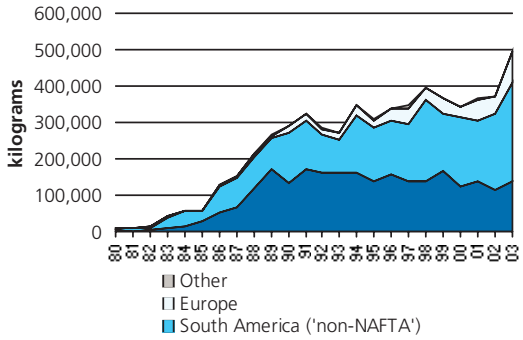
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Bolivia	2,400	1,100	5,493	7,512	7,000	11,620	15,353	7,653	9,395	11,839	10,089	8,437
Colombia	946	4,904	25,402	23,025	44,123	69,155	44,157	61,574	95,898	126,933	136,828	139,161
Peru		240	7,512	7,512	3,462	17,800	13,800	6,200	3,900	7,000	11,312	10,257

1.3.2 Trafficking

Global cocaine seizures reached a record high in 2003...

Global cocaine seizures rose to 495 mt in 2003, a 33% increase as compared to a year earlier, and a new all-time high. Cocaine seizures increased by 20% in North America, 29% in South America, 80% in Europe and 77% in the rest of the world. Fifty five percent of total global cocaine seizures took place in South America, 28% in North America and 17% in Europe.

Fig. 27: Seizures of cocaine (base and HCL), 1980-2003

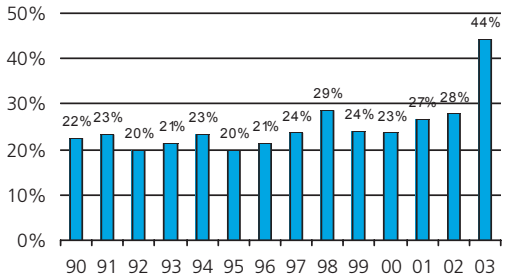


Source: UNODC, Annual Reports Questionnaire Data / DELTA.

Given declining levels of cocaine production in 2003, such increases probably were due to improvements in international cooperation among enforcement agencies. Taking the purity of seized cocaine into account (around 60%) , the cocaine interception rate rose to record levels from 28% in 2002 to 44% in 2003 (32% on average over the 2001-2003 period).

Contrary to expectations, however, the rising interception rate was not reflected in rising cocaine prices or falling cocaine purity levels. In fact, the average inflation adjusted wholesale cocaine price in the USA even declined marginally, from $23,000 per kg in 2001 to $22,000 per kg in 2003. In Western Europe, average wholesale prices increased slightly from $38,000 per kg

Fig. 28: Cocaine interception rate, 1990-2003, based on 60% purity of seized cocaine



Source: UNODC, Annual Reports Questionnaire Data / DELTA.

in 2001 to $43,000 in 2003 and $46,000 in 2004; however, expressed in local currency, inflation adjusted prices actually fell from €43,000 per kg in 2001 to €38,000 in 2003 and €37,000 in 2004. This gives rise to speculations that large stock-piles of cocaine in the Andean region, built up over the last few years, may still be entering the market. Other possible explanations could be higher yields on recent production, improvements in the cocaine manufacturing processes leading to more cocaine production, and/or new sources of cocaine manufacture which are currently unknown. Investigations into the possible causes of this disparity have already started.

... with the largest cocaine seizures reported from Colombia.

Seizures in the Andean region - notably Colombia - have shown a clear upward trend over the last few years, reflecting the increased determination of the authorities to fight the cocaine trade; as a consequence, the overall cocaine interception rate of the Andean region rose from 9% in 1999 to 18% in 2002 and 25% in 2003. For the second year in a row Colombia reported the world's largest cocaine seizures (145.6 mt, 29% of global seizures and 87% of the three Andean countries combined). The United States seized 117 mt or 24% of global seizures, and Spain 49.3 mt or 10% of global seizures.

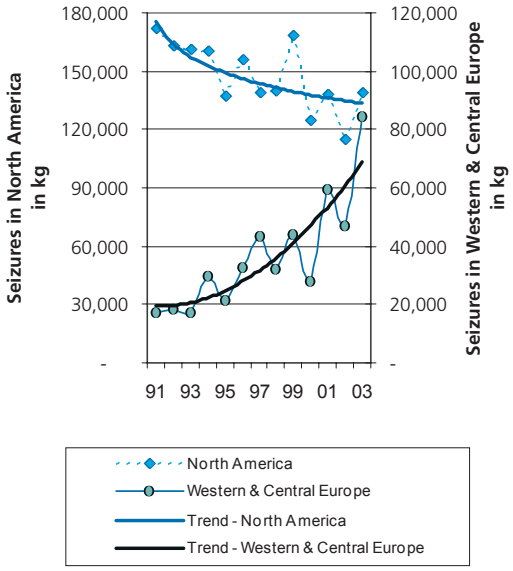
The long-term trend reveals a decline in North America and an increase in Europe…

According to UNODC's cocaine market model,[16] North America, the largest cocaine market, was the destination of some 350 mt of cocaine in 2003, of which 280 mt were actually consumed. In the same year, Europe was the destination of some 140 mt of which some 110 mt were consumed.

Overall, cocaine seizures in North America over the last decade has been showing a declining trend, reflecting lower levels of cocaine consumption as compared to the second half of the 1980s. The share of global cocaine seizures that were made in North America ('NAFTA region') in global cocaine seizures declined from 47% in 1990 to 36% in 2000 and 28% in 2003.

Cocaine seizures in Western and Central Europe, in contrast, have been on the increase, reflecting rising levels of cocaine consumption. Western and Central Europe accounted for 3% of global cocaine seizures in 1980, 6% in 1990, 8% in 2000 and 17% in 2003. European data for 2003 include exceptionally high seizure figures reported from Spain.

Fig.29: Cocaine seizures: North America and Western and Central Europe



Source: UNODC, Annual Reports Questionnaire Data / DELTA.

... with Africa playing a more significant role in trafficking cocaine to Europe ...

Most of the cocaine destined for Europe enters through Spain or the Netherlands, though the entry of cocaine via other countries (notably countries with less well controlled airports) has also increased in recent years. Large amounts of cocaine are either shipped directly from the Andean countries to Spain or they transit Venezuela or Brazil. Cocaine entering Spain and the Netherlands is both for local consumption and for other destinations in Europe, including France and Italy. Most of the cocaine destined for the Netherlands transits the Caribbean region, notably the Netherlands Antilles. Much of the retail trade in Western Europe has been taken over by criminal groups of West African origin. Cocaine destined for the UK, one of the largest cocaine markets in Europe, transits the Caribbean region, notably Jamaica, but is also imported from Spain and the Netherlands.

New trends in cocaine trafficking include the rising importance of cocaine shipments from the Andean region through Western Africa to Europe.[17] In this case the route goes from the Andean region to Brazil[18] and then to countries of Southern Africa and increasingly to countries of Western Africa (Nigeria and other countries located around the Gulf of Guinea) from where cocaine is trafficked by couriers to various European countries. The trade is often organized by West-African crime groups. This diversion of the traditional trafficking route seems to be linked to better controls in the Netherlands (notably the port of Rotterdam and the airport of Schiphol) and along the northern cost of Spain. Another example of a diversion of trafficking routes is organized by Colombian groups that are now trafficking cocaine to Spain through the islands and countries off the cost of Senegal and Mauritania. Once reaching these islands the cocaine is taken over by cannabis resin trafficking groups of Moroccan origin for onward exports to southern Spain. In addition, various Balkan

16 The model, which is discussed in Chapter 2, uses data from 2002.

17 HONLEA Meeting , Vienna, February 2005.

18 Authorities in Brazil estimate that about 60% of the cocaine destined for or transiting Brazil originated in Colombia, 30% in Bolivia and 10% in Peru.

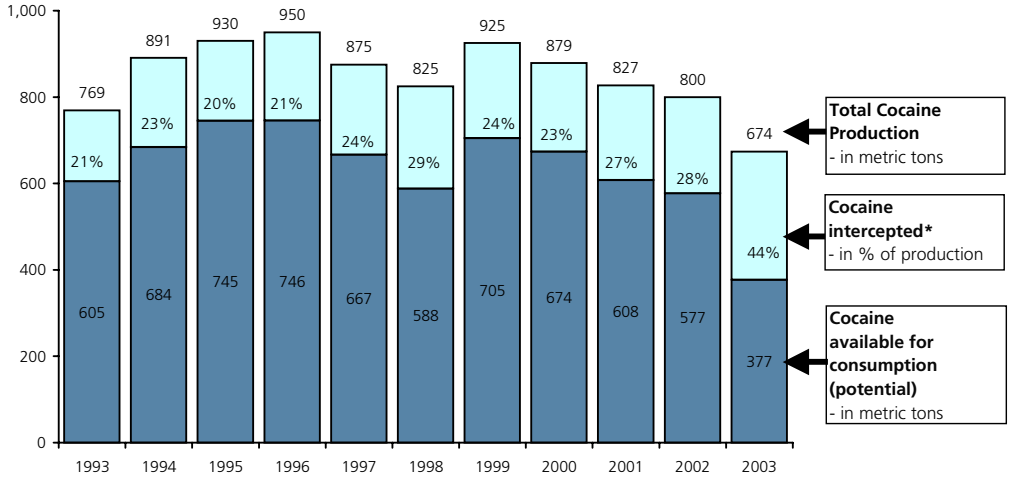
countries are being used for the onward shipment of cocaine by local drug trafficking networks to Western Europe.

.. while Mexico and the Caribbean remain the main transit points for cocaine to the USA.

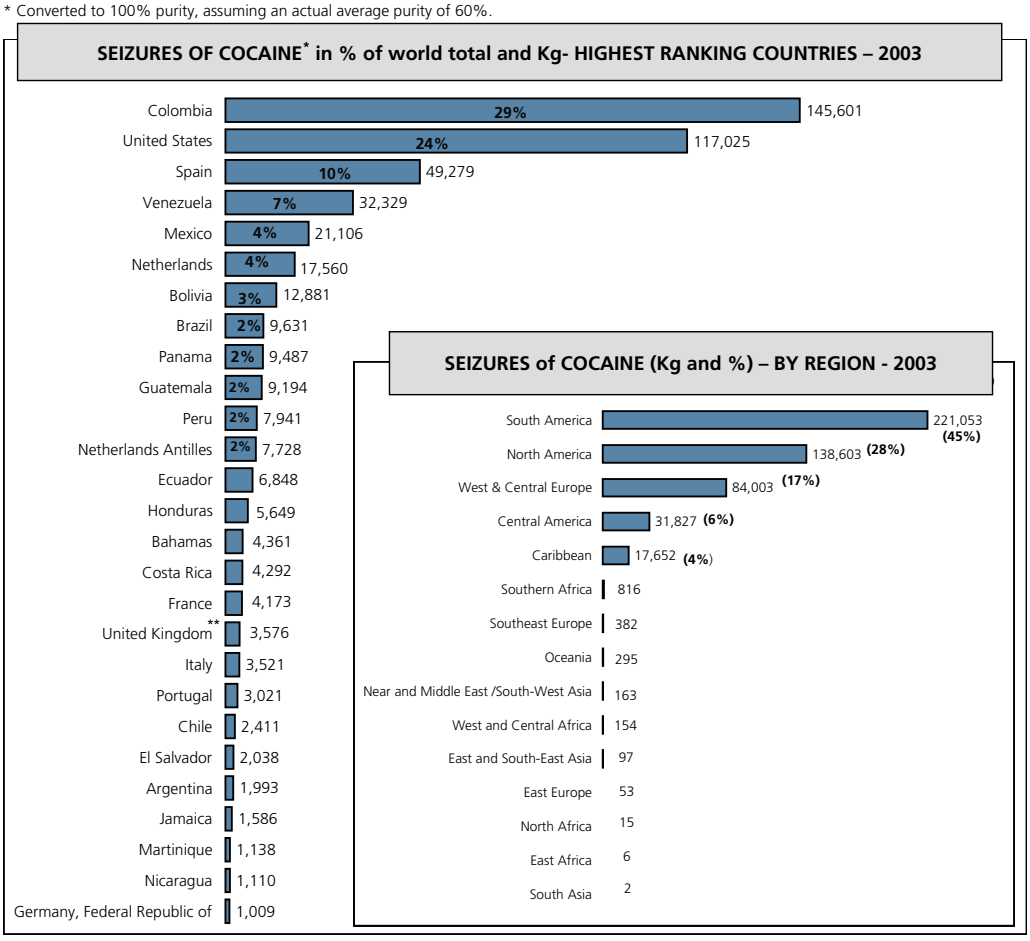
According to estimates by US authorities, 77% of the cocaine destined for the USA transited Central America and Mexico while 22% transited the Caribbean in 2003. About 90% of the cocaine detected departing South America and moving toward the United States in 2003 was transported in non-commercial maritime conveyances, particularly go-fast boats.

Mexican, Colombian and Caribbean groups continue to control much of the wholesale distribution in the USA. Criminal groups of Mexican origin control most wholesale cocaine distribution in the Pacific, Southwest, and West Regions as well as in most areas of the Midwest and Southeast Regions of the United States. Colombian criminal groups control most of the wholesale cocaine distribution in the Northeast Region as well as wholesale cocaine distribution in Miami, Puerto Rico and some of the wholesale distribution in Houston, Dallas, Los Angeles, and New Orleans. In addition, a number of criminal groups from the Caribbean region are involved in wholesale distribution in the USA. Dominican wholesale cocaine distributors are prominent in the Northeast Region and control most wholesale cocaine distribution in Philadelphia and Washington, but also in Atlanta, Cleveland, Detroit, Houston and Milwaukee. Jamaican, Haitian, and Puerto Rican criminal groups control some wholesale distribution in large cities in the Southeast Region.

Fig. 30: Global illicit supply of cocaine 1993 - 2003



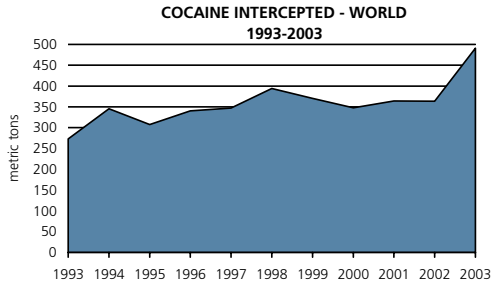
* Converted to 100% purity, assuming an actual average purity of 60%.

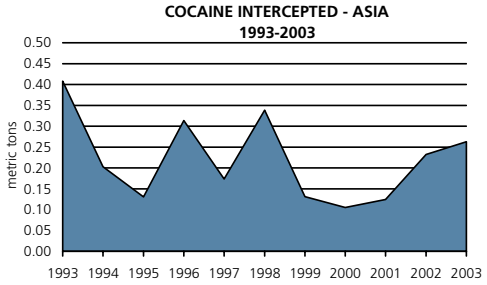


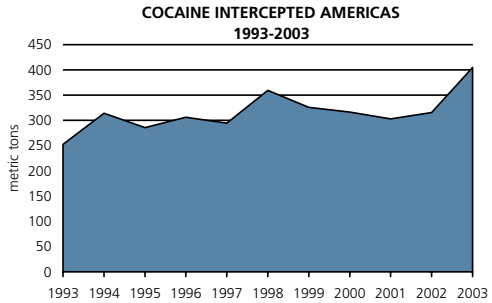
* excluding seizures in liquid form.

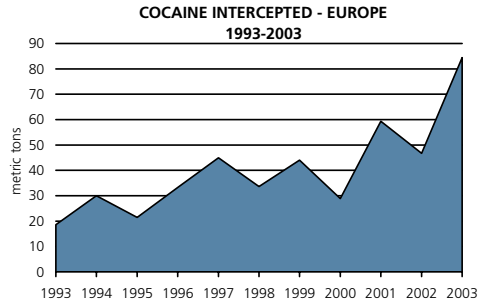
** data refer to 2002

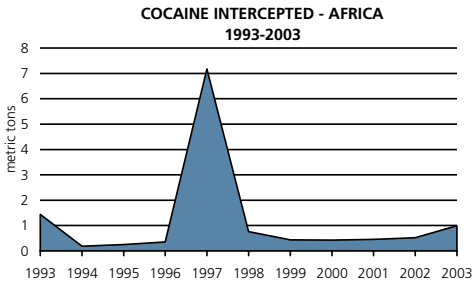
Fig. 31: Global seizures of cocaine, 1993-2003

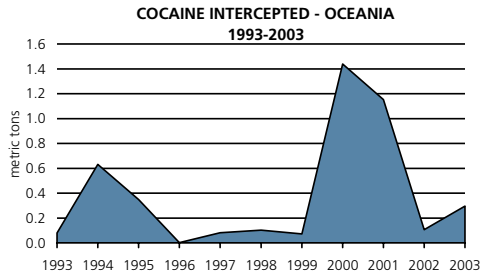




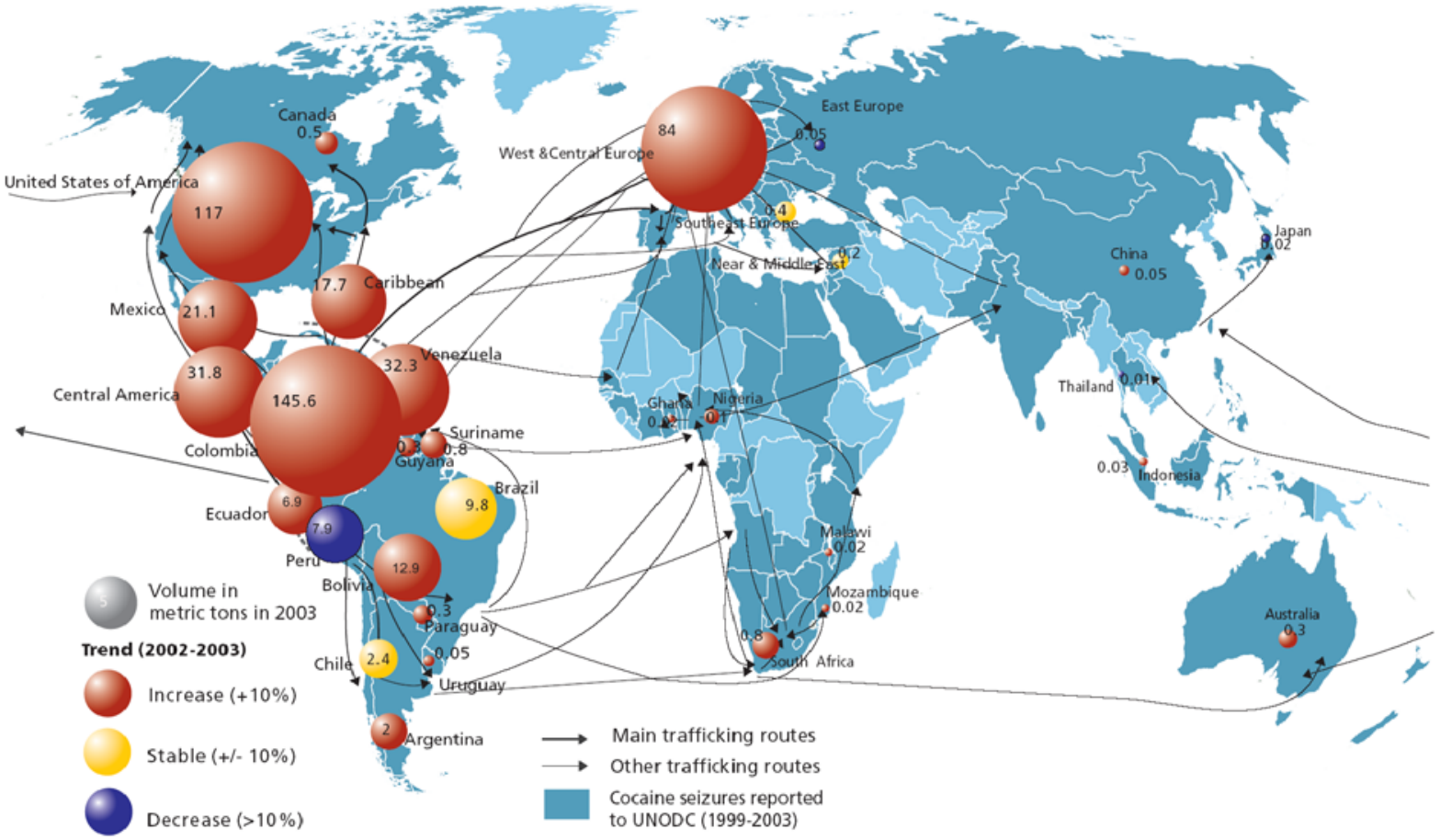








Map 10: Cocaine* seizures 2002 - 2003: extent and trends (countries reporting seizures of more than 0.01 mt (10kg.))



* Cocaine seizures presented in this map do not include seizures in liquid form.

Note: Routes shown are not necessarily documented actual routes, but are rather general indications of the directions of illicit drug flows.

1.3.3 Abuse

Cocaine is the primary problem drug of the Americas. More than 900,000 people were treated in 2003 for cocaine dependence, with more than 90% coming from the Americas. In South America, close to 60% of all treatment demand is for cocaine, and in North America the figure is close to 40%. About 7% of all cocaine users are currently in treatment, and five out of every 10,000 people who use cocaine will die as a result each year. In terms of creating dependence and causing death, cocaine ranks second only to heroin in the dangers it poses.

There are an estimated 14 million cocaine users worldwide, with two-thirds residing in the Americas. The USA continues to be the world's largest cocaine market, although about a quarter of global users are found in Europe, especially in Spain and the United Kingdom but also in the Netherlands, Belgium, Ireland, Italy and Switzerland. Of the global population between the ages of 15 and 64, only 0.3% use cocaine, but the figure is higher in North America (2.3%), West and Central Europe (1%), Oceania (0.9%) and South America (0.8%).

Globally, cocaine use seems to have stabilised, after years of strong increases. Expert opinion from member states suggest use has levelled out in the important market of North America, as well as in Oceania, most of Asia, and most of Eastern Europe. But perceived increases were reported in South America, West and Central Europe, South-East Europe, and a number of countries in South-East Asia.

Key to global cocaine use trends is the situation in the United States, where use among the general population is some 50% lower, and use among high-school students is now about 60% lower, than in the mid-1990s. In 2003, cocaine consumption remained stable in the USA. In contrast, surveys in Europe, for both the general population and for students, have shown an upward trend in cocaine use over the last few years. The upward trend – as shown in student surveys - was, however, limited to Western Europe in recent years; in Central and Eastern Europe cocaine use remained stable. There has been a creeping upward trend in the spread of crack-cocaine in recent years, notably in the Americas, Europe and in Africa, but this appears to have lost momentum in 2003.

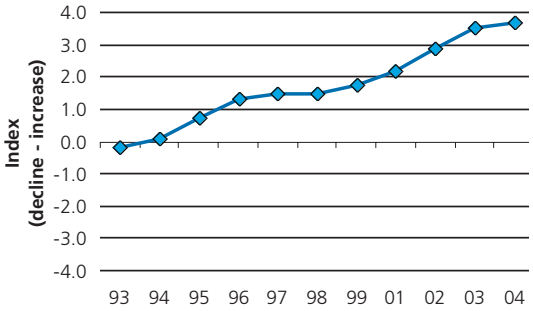
Table 7. Annual prevalence of cocaine use, 2003/04 or latest year available

	Number of users	in % of population 15-64 years
EUROPE	3,421,000	0.6
West and Central Europe	3,224,000	1.0
South-East Europe	70,000	0.1
Eastern Europe	127,000	0.1
AMERICAS	8,930,000	1.6
North America	6,548,000	2.3
South America	2,382,000	0.8
ASIA	246,000	0.01
OCEANIA	183,000	0.9
AFRICA	946,000	0.2
GLOBAL	**13,726,000**	**0.3**

Cocaine abuse above global average
Cocaine abuse around global average
Cocaine abuse below global average

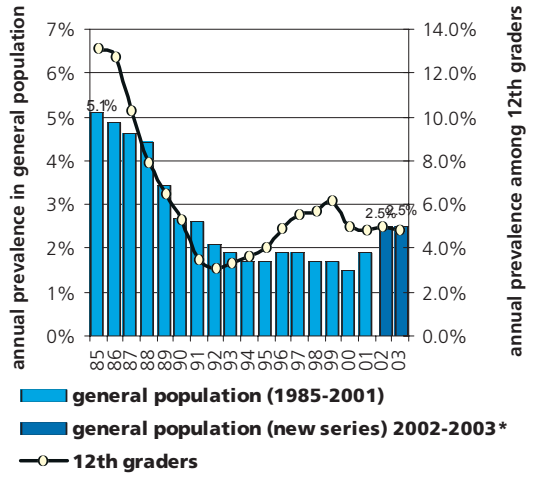
Sources: UNODC, Annual Reports Questionnaire data, various Govt. reports, reports of regional bodies, UNODC estimates.

Fig. 32: Global Drug Use Trend Index - Cocaine - based on expert opinions (country results weighted by estimated number of cocaine users), 1993-2003



Sources: UNODC, Annual Reports Questionnaire Data and UNODC estimates on the number of cocaine users.

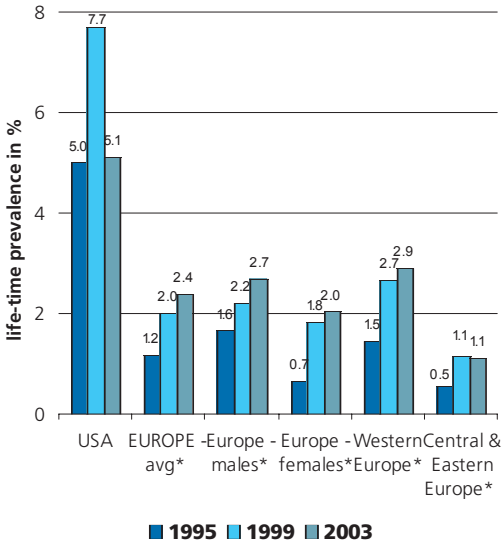
Fig. 33: Cocaine use in the USA: 1985-2003 Annual prevalence rates among the general population, age 12 years and above, and among high-school students (12th graders)



* Given changes in the methodology used, general household survey data for 2002 and 2003 are not comparable with results of previous surveys conducted in previous years.

Sources: SAMHSA, *National Household Survey on Drug Use and Health* and NIDA, *Monitoring the Future*.

Fig. 34: Life-time prevalence among 15-16 year old students in the USA and in Europe**

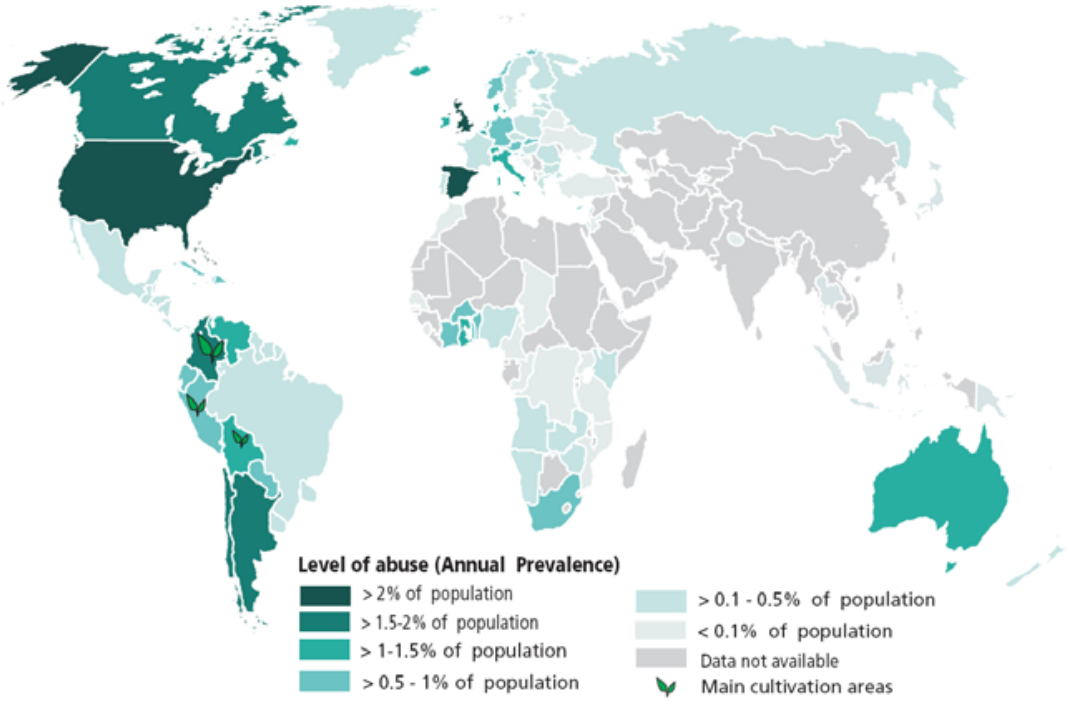


* Average weighted by population age 15-19

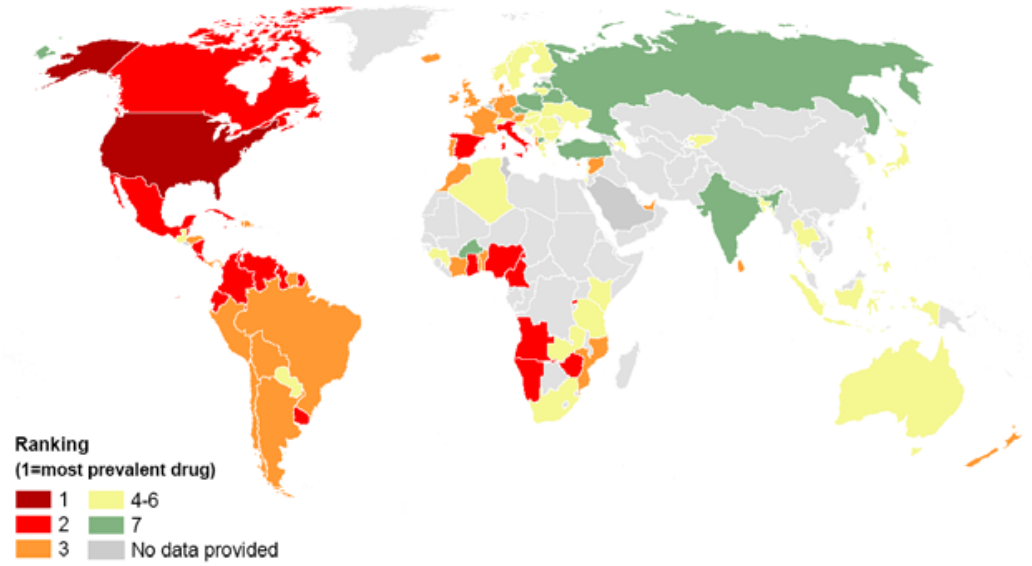
** Country results weighted by population age 15-19.

Sources: NIDA, Monitoring the Future and Council of Europe, The 2003 ESPAD Report, Alcohol and Other Drug use among students in 35 European countries and previous ESPAD survey reports, Govt. reports.

Map 11: Use of cocaine 2002 - 2004 (or latest year available)

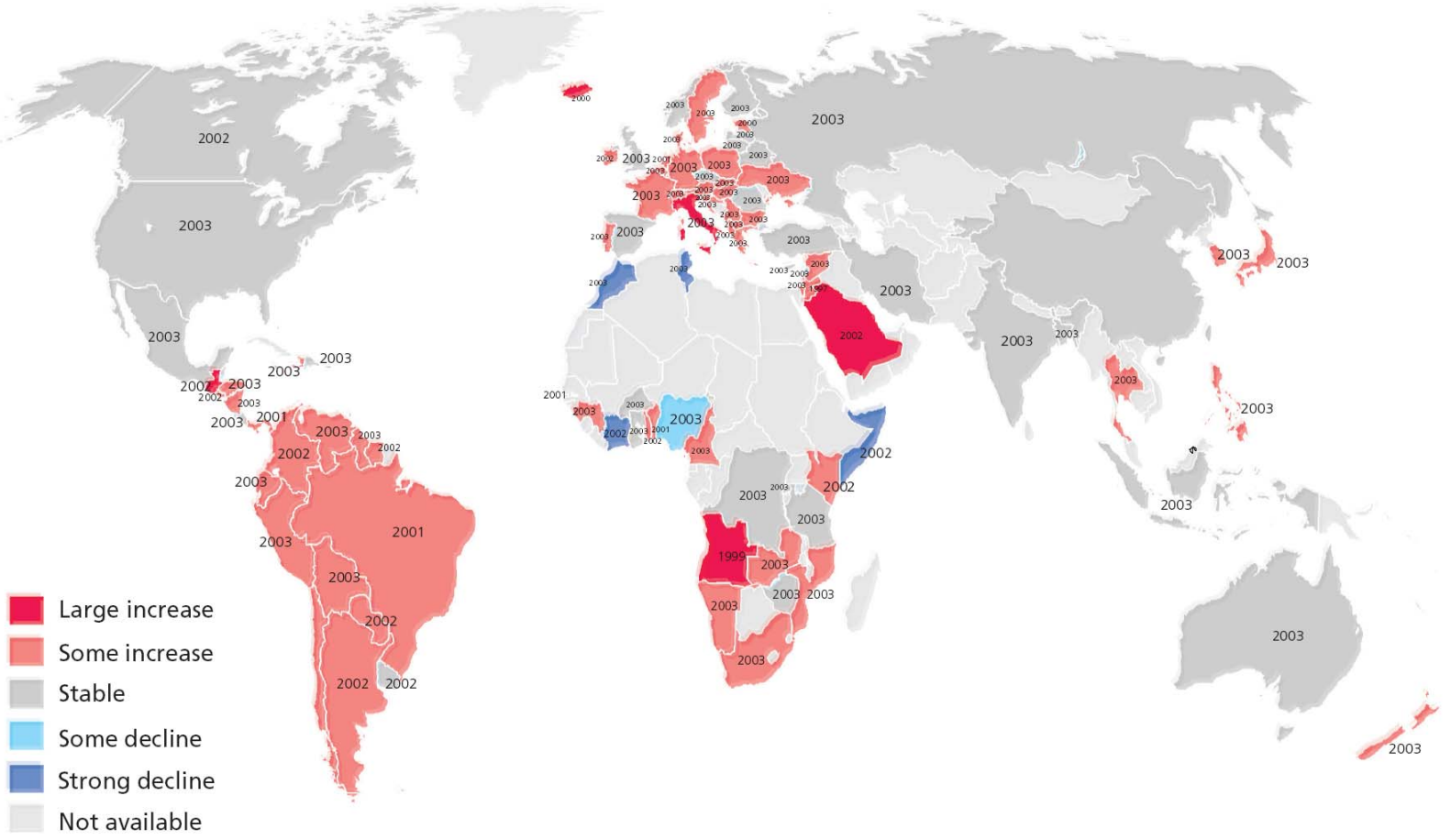


Map 12: Ranking of cocaine in order of prevalence in 2003



Sources: UNODC Annual Reports Questionnaires data, SAMSHA US National Household Survey on Drug Abuse, Iranian Ministry of Health, Rapid Assessement Study and UNODC ARQ,Council of Europe, ESPAD.

Map 13: Changes in consumption of cocaine, 2003 (or latest year available)



Sources: UNODC Annual Reports Questionnaires data, UNODC (Regional Centre Bangkok) Epidemiology Trends in Drug Trends in Asia (Findings of the Asian Multicity Epidemiology Workgroup), December 1999, National Household Surveys submitted to UNODC, United States Department of State (Bureau for International Narcotics and Law Enforcement Affairs) International Narcotics Control Strategy Report, 1999;Bundeskriminalamt (BKA) and other Law Enforcement Reports, SACENDU (South African Community Epidemiology Network) July - December 1998,UNODC and Ministerio de Educacion,Estudio Epidemiologico 1999, CEDRO, Epidemiologia de Drogas en la poblacion urbana Peruana - 1995, INCB, Annual Report for 1999.

1.4 Cannabis market

1.4.1 Production

Cannabis is a plant that grows well in virtually every inhabited region of the world, and can be cultivated with little maintenance in small plots, or even indoors. In addition, unlike most other street drugs, it can be consumed with little processing after harvesting. As a result, users can feasibly cultivate their own supply, and consequently production is highly decentralized. While substantial international trafficking of cannabis does occur, it is unclear what share of the total market this comprises. Thus, our most reliable sources of information on the extent of production (crop surveys, satellite monitoring, and international seizure data) are of limited use in estimating the size of the cannabis market.

The matter is further complicated by the fact that there are also two main forms in which cannabis is consumed as a drug, which constitute fairly distinct market chains:

- "Cannabis herb" is comprised of the flowering tops and leaves of the plant, which are smoked like tobacco using a variety of techniques. While this drug is consumed throughout the world, the largest market for cannabis herb appears to be North America, where 60% of global seizures occurred in 2003.

- "Cannabis resin" is popularly referred to as "hashish", and consists of the secretions of the plant emitted in the flowering phase of its development. This resin can be gathered by hand ("hand rubbing", the traditional practice in India), or by sieving the herbal material using some form of screen (the traditional practice in Afghanistan and Morocco). It is also possible to produce "hashish oil", although this form of the drug is not widespread. Western Europe is the largest market for cannabis resin, responsible for nearly 70% of global seizures in 2003, and 80% of this hashish was produced in Morocco.[19]

1.4.1.1 Cannabis herb

Production is globally dispersed.

The unique properties of the cannabis plant have led to its widespread and diffuse cultivation. Over the 1993-2003 period, 86 countries provided UNODC with cannabis production estimates. For comparison, only 40 countries provided estimates for opium-poppy cultivation, and only six provided estimates for coca-leaf production. But the fact that a country did not provide an estimate does mean that no cultivation exists, as some countries simply lack the capacity to come up with accurate estimates. Luckily, there are other ways of identifying cannabis producing countries.

Member states were also asked to identify the national source of the cannabis consumed in their countries. On this basis, 114 producer countries can be identified. A third list of producer countries can be generated by singling out those that report the seizure of whole cannabis plants. It is extremely inefficient to transport whole plants internationally, as only certain parts are useable as a drug. Thus, when a whole plant is seized, it is very likely that it was locally produced. Seizures of whole

19 France reported that 82% of the cannabis resin found on its market in 2002 originated in Morocco. Similar estimates have been made for Belgium (80%), Sweden (85%), and the Czech Republic (70%). Spain, Italy, Denmark, Finland and Ireland reported that almost all of the cannabis resin originated in Morocco.

cannabis plants were reported in 144 countries during the 1993-2003 period. Combining these three lists results in the identification of some 163 countries and territories where cannabis is produced, out of 197 countries reporting (83%).

Most of these countries produce solely to satisfy local demand, but there are a number of countries that produce for export. For example, Paraguay produces much of the cannabis consumed in its neighbouring countries, and European production hubs include Albania and the Netherlands. Other significant exporters include:

- In Africa: Nigeria, South Africa, Malawi, Lesotho, and Swaziland
- In the Americas: Mexico, Canada, Jamaica and Columbia
- In Central Asia: Kazakhstan and Kyrgyzstan
- In the Middle East: Egypt and Lebanon
- In South Asia: India
- In Southeast Asia: Cambodia, Thailand, and the Philippines

A number of indicators suggest that North America produces more cannabis than any other region, and this market is largely self contained: most of production is consumed domestically. US authorities have reported that about two thirds of the cannabis consumed in the country is domestically produced, while over half (56%) of the cannabis imported to the US comes from Mexico and another 20% comes from Canada.

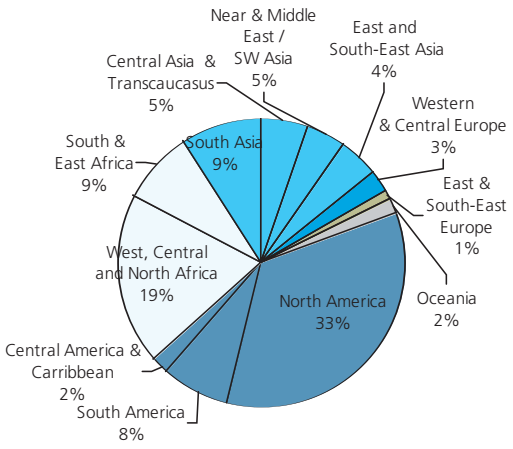
In terms of gross volumes, estimates made available to UNODC suggest that North America accounts for about one third of global production, or 14,000 metric tons. The second largest producer is Africa: 12,000 metric tons of cannabis herb, or about 28% of global production. Other important cannabis producing areas are South Asia (9%) and Central Asia (5%).

Production has been rising and may have exceeded 40,000 mt in 2003.

Estimating the volume of global cannabis production is extremely difficult. The last *World Drug Report* provided an estimate of about 32,000 mt of cannabis herb production at the global level, but new calculations suggest that the true figure may be even larger, perhaps as much as 42,000 mt Since the methods used in arriving at these two calculations are different, this should not be interpreted as a trend. There are other indications, however, that global cannabis production has been increasing. Both estimates of the number of cannabis consumers globally and the quantities of cannabis seized by law enforcement have increased in the past decade. Out of the 42,000 mt produced, UNODC estimates that only about 30,000 mt actually reach the end consumers. The rest is either seized or otherwise lost in transit.

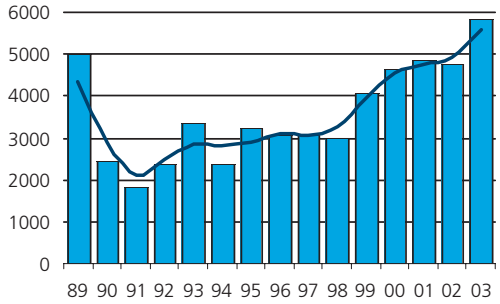
It would also appear that cannabis is becoming more potent in a number of markets. In the USA, for instance, the average THC content (potency) rose from less than 2% in the 1970s to 6.3% in 2003.[20] Increases

Fig. 35: Distribution of cannabis herb production in 2003/2004 (42,100 mt)



Source: UNODC, Annual Reports Questionnaire Data, other Govt. reports and UNODC estimates.

Fig. 36: Global cannabis herb seizure



Source: UNODC, Annual Reports Questionnaire Data.

in the THC content were also reported from Canada and from the Netherlands.[21]

1.4.1.2 Cannabis resin

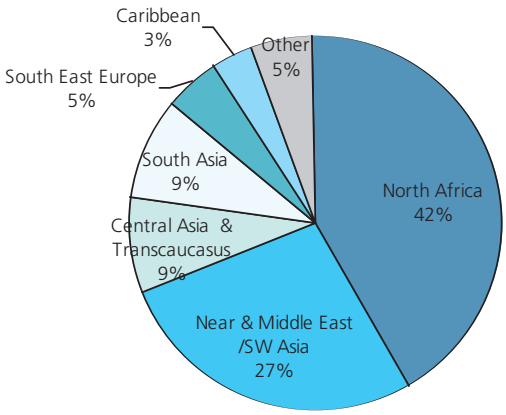
Morocco is the world's most significant resin exporter, feeding the Western European market. The UNODC and the Government of Morocco conducted comprehensive cannabis resin surveys of the country in 2003 and 2004. The 2003 survey placed total resin production at about 3,070 mt, cultivated on 134,000 hectares of land in the Rif region by some 96,600 families. The 2004 survey showed a 10% decline in the land dedicated to cannabis cultivation (120,500 ha), with an estimated production of 2,760 mt[22].

Despite this recent local decline, both resin seizures and consumption estimates suggest that the long-term trend is towards a growth in global production since the early 1990s. Last year's *World Drug Report* placed global production between 5,100 and 7,400 mt Production in 2003 was likely on the high end of this range. It would appear that more than 40% of the global cannabis resin supply is being produced in Northern Africa and more than a quarter in the Near East and Middle East. These two regions account for more than two thirds of global cannabis resin production. Other cannabis resin producing regions of importance are Central Asia, South Asia and, to a lesser extent, South-East Europe and the Caribbean.

Cannabis resin production is concentrated in Morocco as well as in Pakistan and Afghanistan.

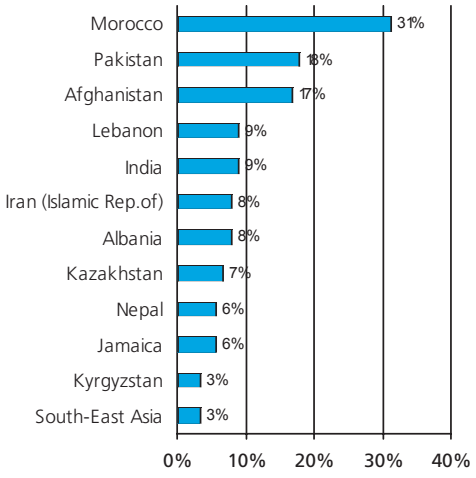
When Member States were asked about the source of cannabis resin in their countries, Pakistan and Afghanistan were the most often cited as source countries after Morocco over the period 1999–2003. Other important source countries identified are India, Lebanon, Albania, the Central Asian countries (notably Kazakhstan and Kyrgyzstan), Nepal, South-East Asia and a number of African countries. The only country in the Americas cited as an important country of origin for cannabis resin was Jamaica.

Fig. 37: Distribution of global cannabis resin production (N = 7,400 mt in 2003/04)



Source: UNODC, Annual Reports Questionnaire Data, other Govt. reports and UNODC estimates.

Fig. 38: Main source countries of cannabis resin, 1999-2003
(based on information from 90 countries)



Source: UNODC, Annual Reports Questionnaire Data, other Govt. reports and UNODC estimates.

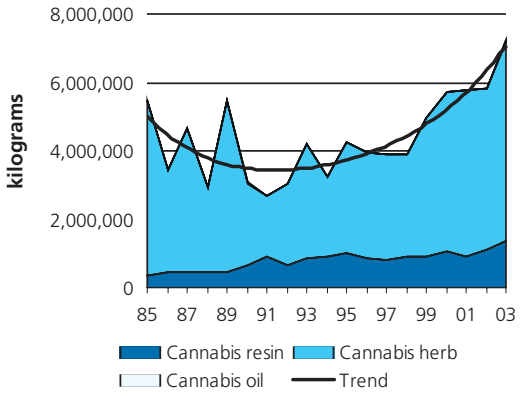
20 University of Mississippi, Cannabis Potency Monitoring Project Report #85, May 2004.
21 Second Technical Conference on Drug Control Research, Vienna, July 19-21, 2004. A review of the potency evidence undertaken by EMCDDA in 2004 was, however, less conclusive.
22 Some of the decline appears to have been a consequence of an earthquake, resulting in increased attention being given by the national authorities and the international community to the region concerned.

1.4.2 Trafficking

The increase in cannabis trafficking continues

Cannabis herb and cannabis resin remain the two most extensively trafficked drugs worldwide. Cannabis herb seizures amounted to 5,845 mt, cannabis resin to 1,361 mt and cannabis oil to14 mt in 2003. Seizures of the three cannabis products taken together increased by 24% in 2003 to 7,220 mt, the highest level since 1984 (21,000 mt), more than twice the seizures reported in the early 1990s and an increase of 46% since 1999. In addition, 55 million cannabis plants and 7,600 mt of cannabis plant material were seized worldwide in 2003, which corresponds[23] to an increase of about 24% in 2003 and more than 50% over the 1999-2003 period.

Fig. 39: Cannabis seizures, 1985-2003



Source: UNODC, Annual Reports Questionnaire Data/DELTA.

1.4.2.1 Cannabis herb

Cannabis herb is the most widely trafficked drug - and seizures rose again in 2003…

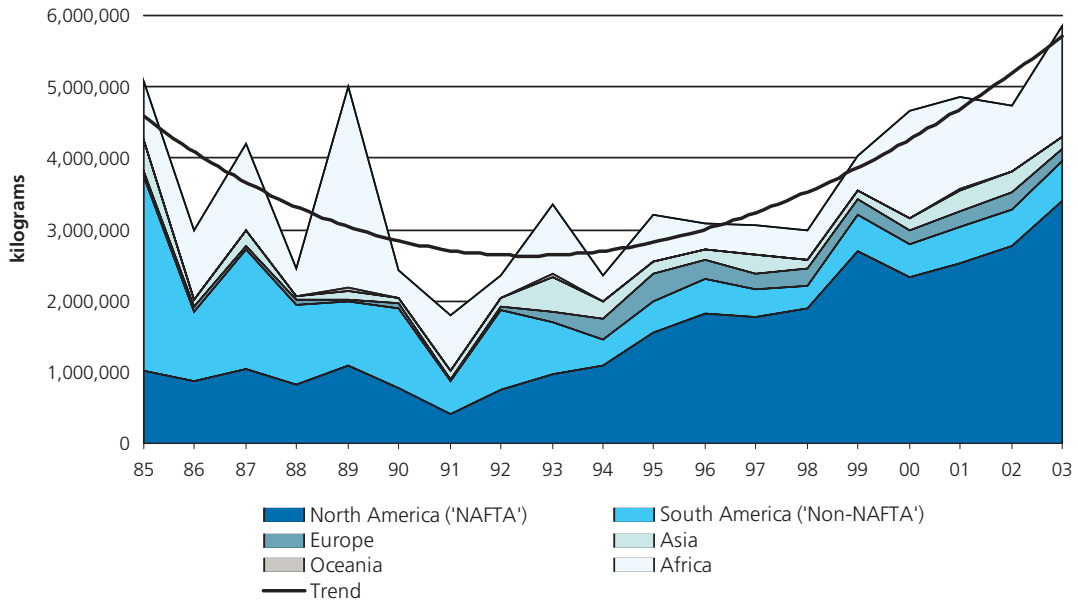
In terms of both volume and geographic spread, cannabis herb is the most interdicted drug in the world. Out of 181 countries and territories reporting seizures to UNODC over the 2001-2003 period, 166 reported seizures of cannabis herb, more than for heroin (148), cocaine (140), cannabis resin (118), amphetamines (96) or ecstasy (88). Cannabis herb seizures rose 25% in 2003 and were 112% higher than in 1990.

…with trafficking increasingly concentrated in the Americas and in Africa.

58% of global cannabis herb seizures occurred in North America in 2003. The remainder took place in Africa (26%), South America (10%) (non-NAFTA), Asia (3%) and Europe (3%). The world's largest cannabis herb seizures were made – once again – by the law enforcement agencies of Mexico (2,160 mt or 37% of the total), followed by those of the United States (1,224 mt or 21% of the total). The proportion of seizures made in North America rose from 32% in 1990 to 58% in 2003, while the proportion of seizures made in South America ('non-NAFTA') declined over the same period from 46% to 10%. In 2003, cannabis herb seizures increased in both Central America (33%) and in South America (18%) but declined in the Caribbean (-25%). The proportion of seizures made in Africa increased from 16% of global cannabis herb seizures in 1990 to 20% in 2002 and 26% in 2003. The increase in cannabis herb seizures in Africa in 2003 (+65%) was mainly due to rising seizures in East Africa. In contrast,

23 Expressed in kg equivalents.

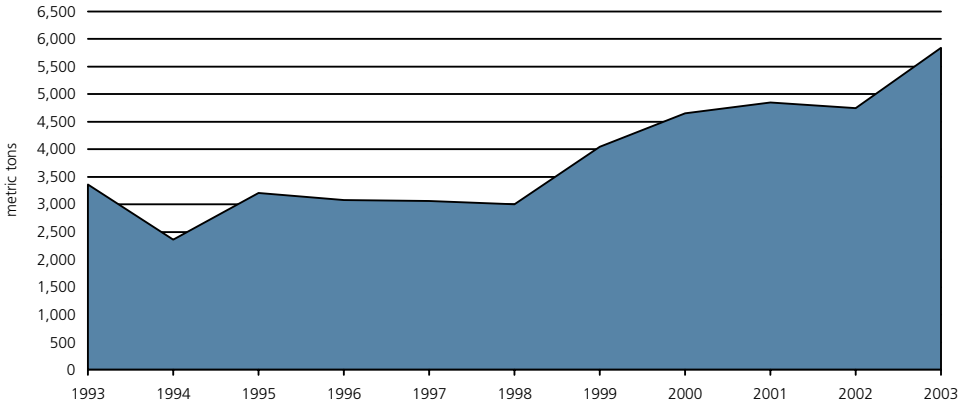
Fig. 40: Seizures of cannabis herb - regional breakdown, 1985-2003



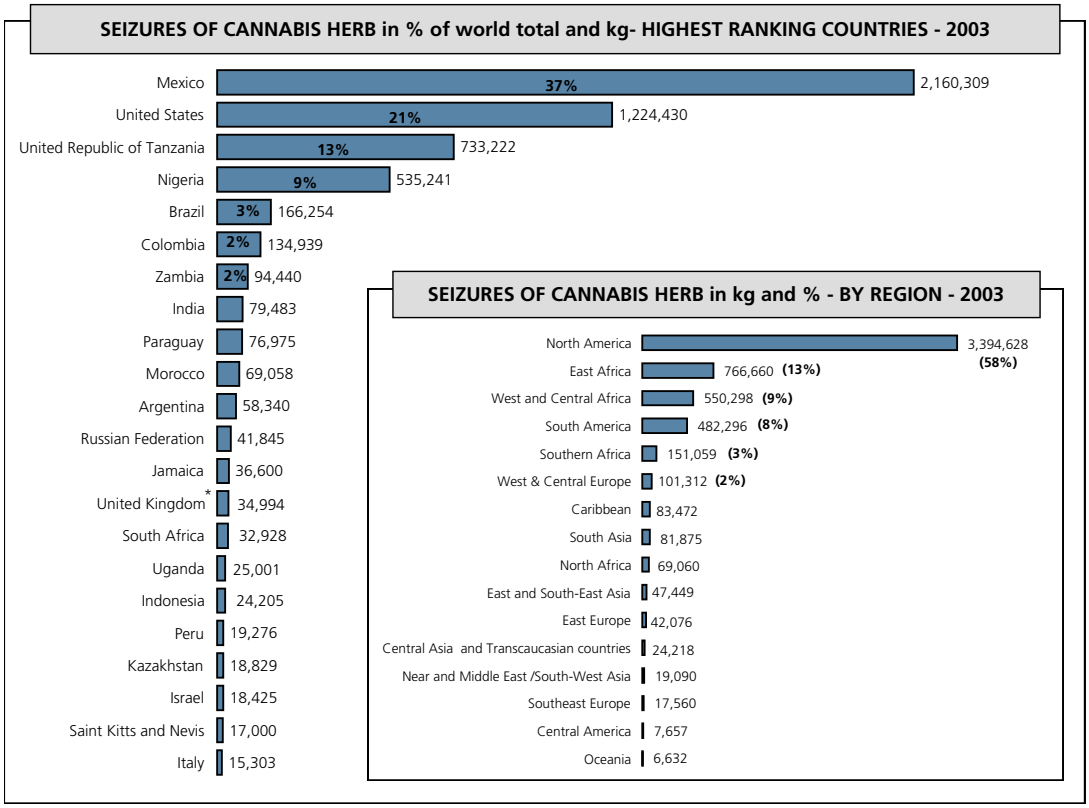
Source: UNODC, Annual Reports Questionnaire Data/DELTA.

cannabis herb seizures declined in both Asia (-40%) and in Europe (-32%). Declines in Asia were highest in East and South-East Asia. Shifts in law enforcement priorities seem to have been largely responsible for the decline in Western and Central Europe (-40%). Cannabis herb seizures in Eastern Europe, in contrast, increased by 40%.

Fig. 41: Global seizures of cannabis herb, 1993 -2003

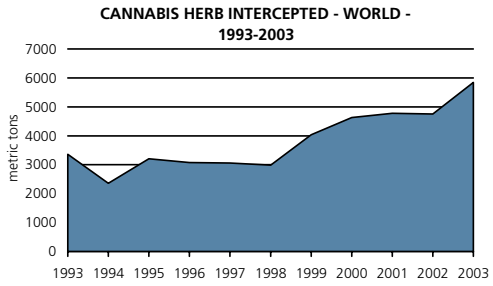


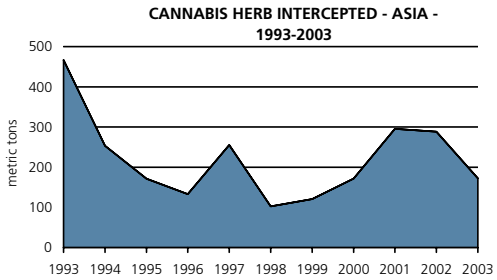
Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Metric tons	3,360	2,358	3,209	3,077	3,059	2,998	4,042	4,656	4,849	4,745	5,845

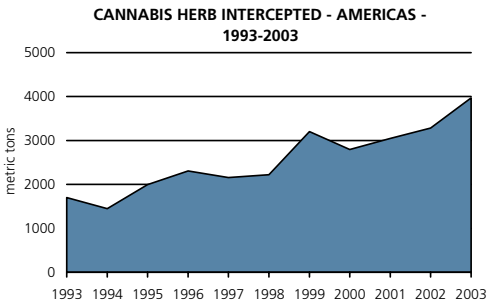


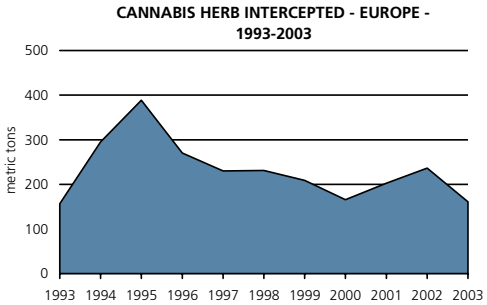
* data refer to 2002

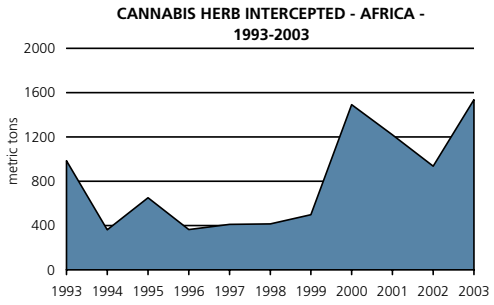
Fig. 42: Global seizures of cannabis herb, 1993 -2003

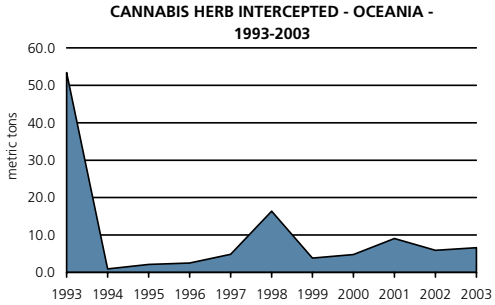




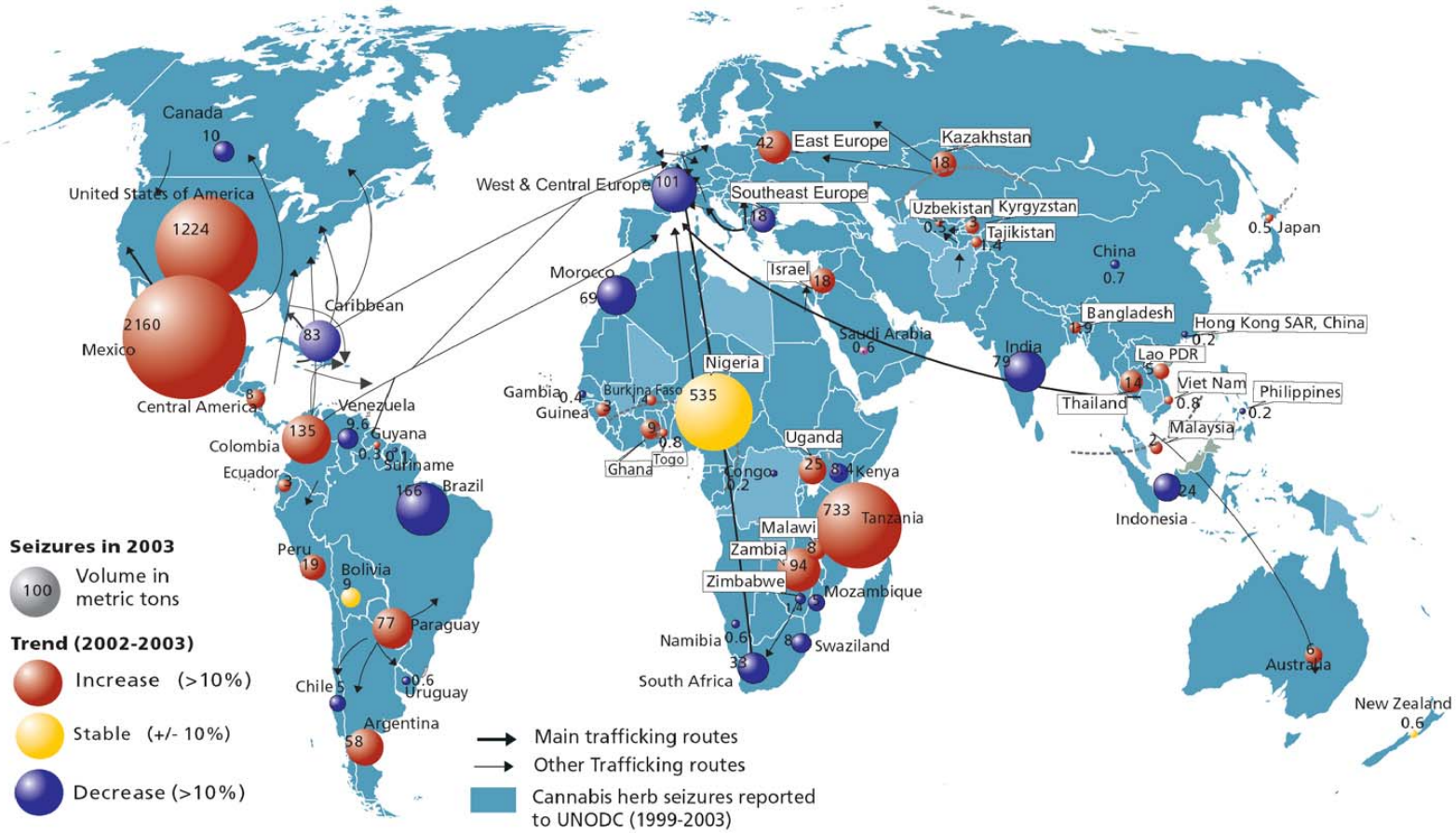








Map 14: Cannabis herb seizures 2002 - 2003: extent and trends (countries reporting seizures of more than 10 kg.)



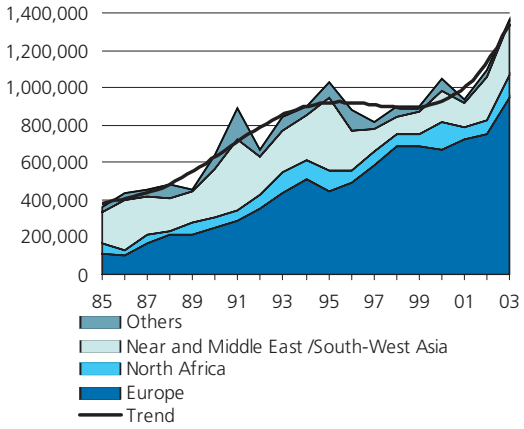
Note: Routes shown are not necessarily documented actual routes, but are rather general indications of the directions of illicit drug flows.

1.4.2.2 Trafficking in cannabis resin

Cannabis resin seizures also increased to a new all time high in 2003.

Global cannabis resin seizures increased by 25% in 2003 to 1,361 mt, reaching a new all time high. Resin seizures increased most significantly in North Africa (63%), in the Near and Middle East/South-West Asia (21%) (following an increase by 74% a year earlier) and in Europe (26%).

Fig. 43: Cannabis resin seizures, 1985-2003



Source: UNODC, Annual Reports Questionnaire Data / DELTA.

Cannabis resin seizures are concentrated in West and Central Europe...

Out of global cannabis resin seizures of 1,361 mt, Europe accounted for 950 mt, of which 947 mt or 70% of the total, was seized in West and Central Europe, 21% in the Near and Middle East /South-West Asia and 8% in North Africa. The largest seizures worldwide were reported by Spain (727 mt or 53% of the total), followed by Pakistan (99 mt or 7%), Morocco (96 mt or 7%) and Afghanistan (81 mt or 6%). Authorities in Iran seized 77 mt (6% of total).

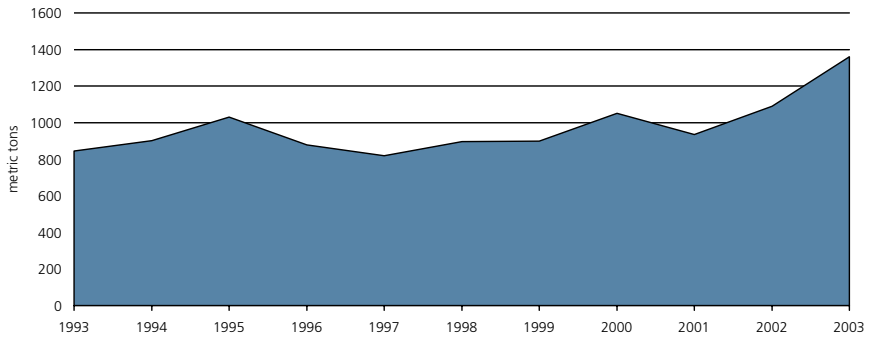
…and Europe continues to be the main destination of cannabis resin.

The main destination of cannabis resin is West and Central Europe. About 80% of the cannabis resin destined for the West and Central European market is estimated to originate in Morocco including large shares of the markets of Spain (100%) and Portugal, France (82%), Belgium (80%), Sweden (85%), the Czech Republic (70%). Much of the cannabis resin transits Spain and the Netherlands before being shipped to other countries. The remainder of the resin supply originates from Afghanistan/Pakistan (e.g. 10% in Belgium, 30% in the Czech Republic), from Central Asia (mostly in the Russian Federation, other CIS states and some of the Baltic countries) or from within Europe (mainly Albania, supplying the markets of various Balkan countries and Greece).

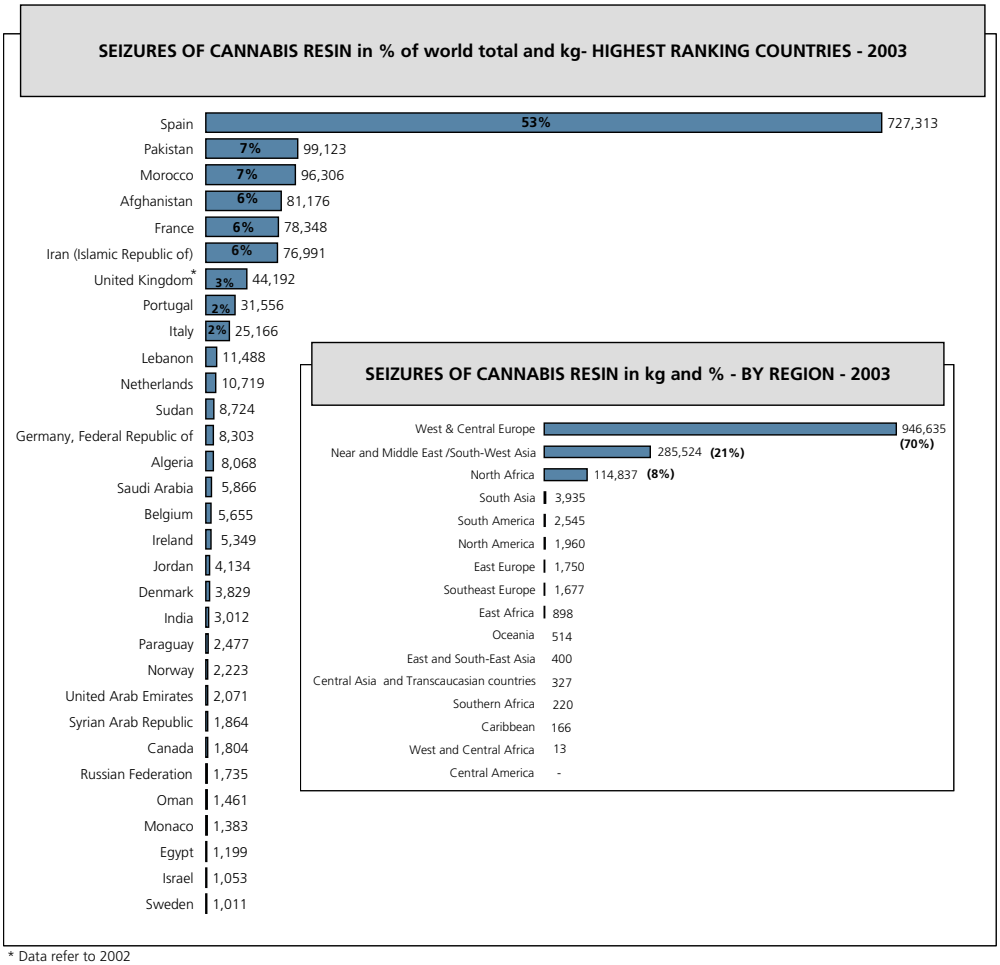
The second largest destination of cannabis resin is the Near and Middle East / South-West Asia region. This region is mainly supplied by cannabis resin produced in Afghanistan and Pakistan and, to a lesser degree, by cannabis resin originating in Lebanon. Some of the cannabis resin from Afghanistan/Pakistan is also being shipped to Canada and to countries in Eastern Africa.

North Africa makes up the third largest market and is predominantly supplied by cannabis resin produced in Morocco. The importance of other markets is limited. Nepal is a source country for cannabis resin exports to India and to some other countries and Jamaica is a source country for cannabis resin exports to some other countries in the Americas.

Fig. 44: Global seizures of cannabis resin, 1993 - 2003

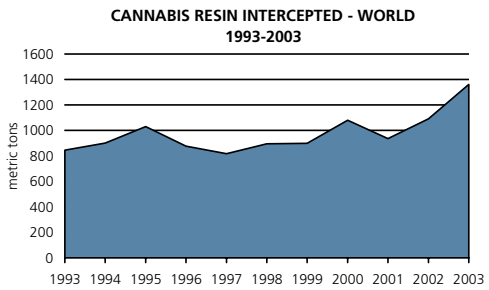


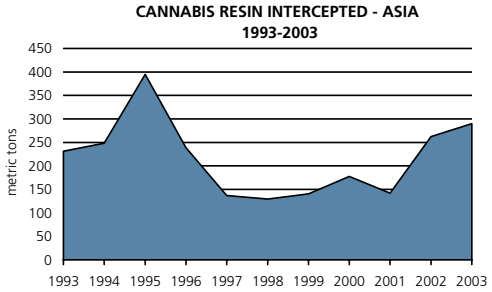
Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Metric tons	846	901	1,030	877	818	896	898	1,052	934	1,091	1,361

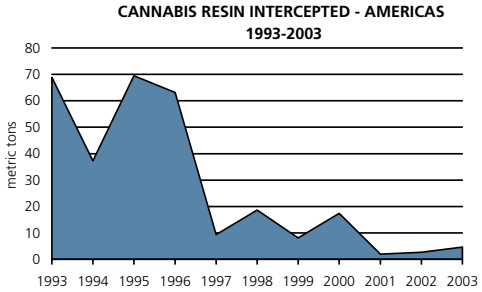


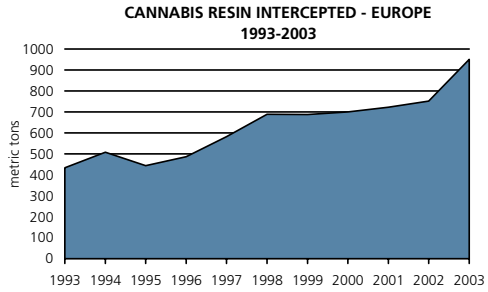
* Data refer to 2002

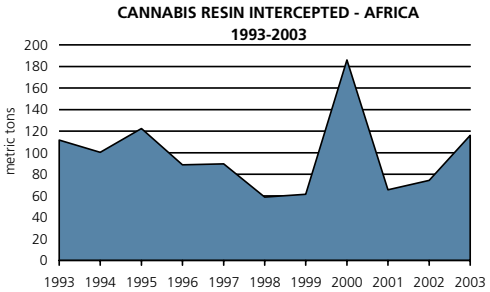
Fig. 45: Global seizures of cannbis resin, 1993-2003

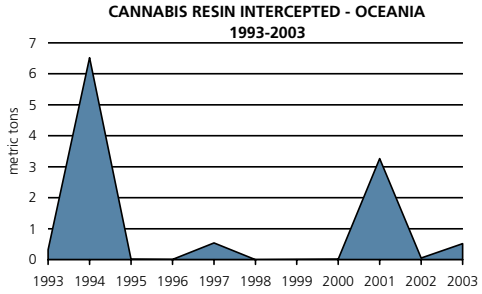




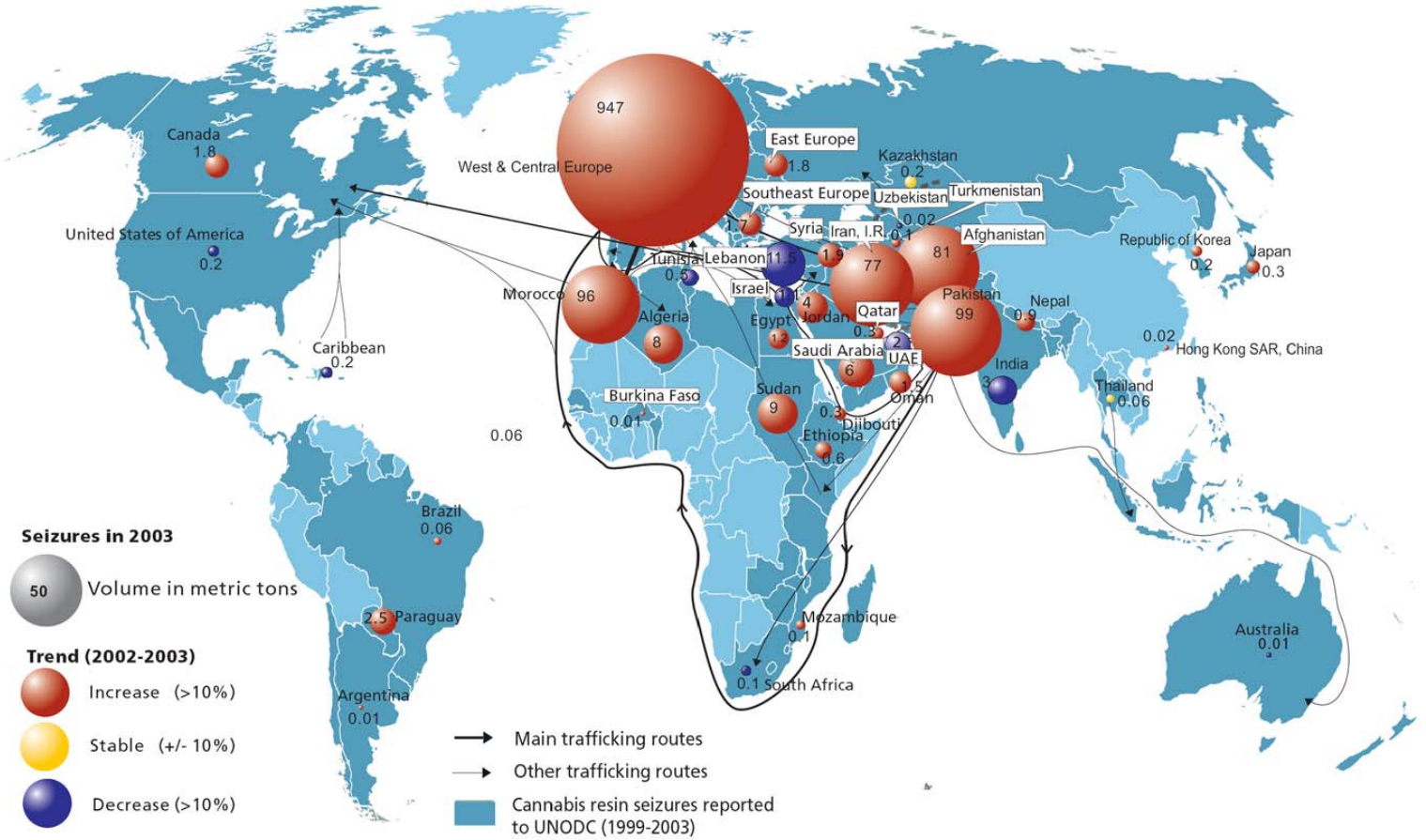








Map 15: Cannabis resin seizures 2002 - 2003: extent and trends (countries reporting seizures of more than 10 kg.)



Note: Routes shown are not necessarily documented actual routes, but are rather general indications of the directions of illicit drug flows.

1.4.3 Abuse

Cannabis is far and away the most commonly consumed street drug in the world. An estimated 161 million people used cannabis in 2003, equivalent to 4% of the global population between the ages 15 and 64. In some parts of the world, herbal cannabis is most popular, while others prefer cannabis resin, but most member states say it is the most widely used illicit substance in their countries. Cannabis use is most prevalent in the Oceania region, followed by North America and Africa. It is less common in Asia, but due to the size of the population, Asia still contains about a third of global cannabis users.

It also appears that cannabis use is increasing. According to expert opinions solicited from member states, far more countries felt that cannabis use was increasing (46% of 101 countries responding) than declining (16%) in 2003. In the last decade, the consensus is that cannabis use has been growing faster than use of cocaine or opiates.

This year's estimate of 161 million users worldwide is about 10% higher than that published in the last World Drug Report. This is attributable to increases in prevalence estimates in South-America (including the Caribbean and Central America), in Africa, in Europe and in several countries in Asia. North American estimates have remained largely stable, while declines were reported for the Oceania region and some countries in South-East Asia.

In Europe, for example, school surveys among 15-16 year olds found that the share of students reporting having ever tried cannabis rose by an average of almost

Table 8: Annual prevalence of cannabis use, 2003/04 or latest year available

	Cannabis use	
	No. of users	***in % of population age 15-64***
EUROPE	30,400,000	5.6
West & Central Europe	22,900,000	7.3
South-East Europe	2,100,000	2.5
East Europe	5,500,000	3.8
AMERICAS	36,900,000	**6.6**
North America	28,700,000	10.2
South America	8,200,000	2.9
ASIA	53,300,000	2.2
OCEANIA	3,300,000	15.8
AFRICA	37,000,000	8
GLOBAL	**160,900,000**	**4**

Above global average
Around global average
Below global average

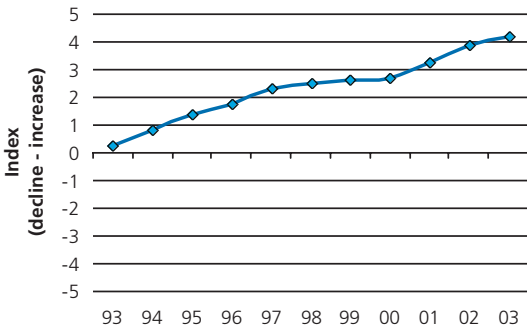
Sources: UNODC, Annual Reports Questionnaire Data, Govt. reports, reports of regional bodies, UNODC estimates.

25% between 1999 and 2003, or more than 80% between 1995 and 2003. The increase seems most pronounced in Central and Eastern Europe, where usage among young people has become almost as common as in Western Europe in recent years.

On the other hand, countries where cannabis consumption is most common, namely the USA and Australia, have not shown increases. The share of 15-16 year-old students in the USA reporting having tried cannabis fell by 14% between 1999 and 2003. Annual prevalence of cannabis use among the general population and among high-school students in the USA is about a third less than in the late 1970s.[24] Cannabis use among the general population in Australia has declined by almost 37% since its peak in 1998.[25]

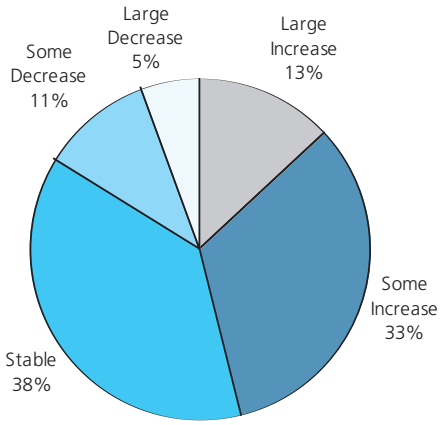
Despite its widespread use, cannabis does not generate demand for treatment at the rate of other street drugs, but more than 60% of treatment admissions in Africa are cannabis-related, compared to 45% in North America and 30% in the Oceania region.

Fig. 46: Global Drug Use Trend Index - cannabis - based on expert opinions (country results weighted by estimated number of cannabis users), 1993-2003



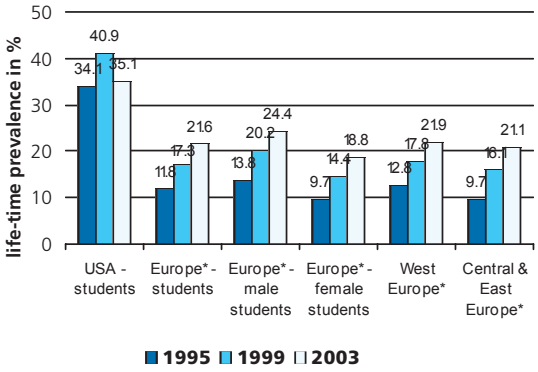
Sources: Sources: UNODC, Annual Reports Questionnaire Data, Govt. reports, reports of regional bodies, UNODC estimates.

Fig. 47: Reported trends of cannabis use at the global level in 2003 (based on expert opinion from 101 countries)



Sources: Sources: UNODC, Annual Reports Questionnaire Data, Govt. reports, reports of regional bodies, UNODC estimates.

Fig. 48: Life-time prevalence among 15-16 year olds in the USA and in Europe, 1995-2003



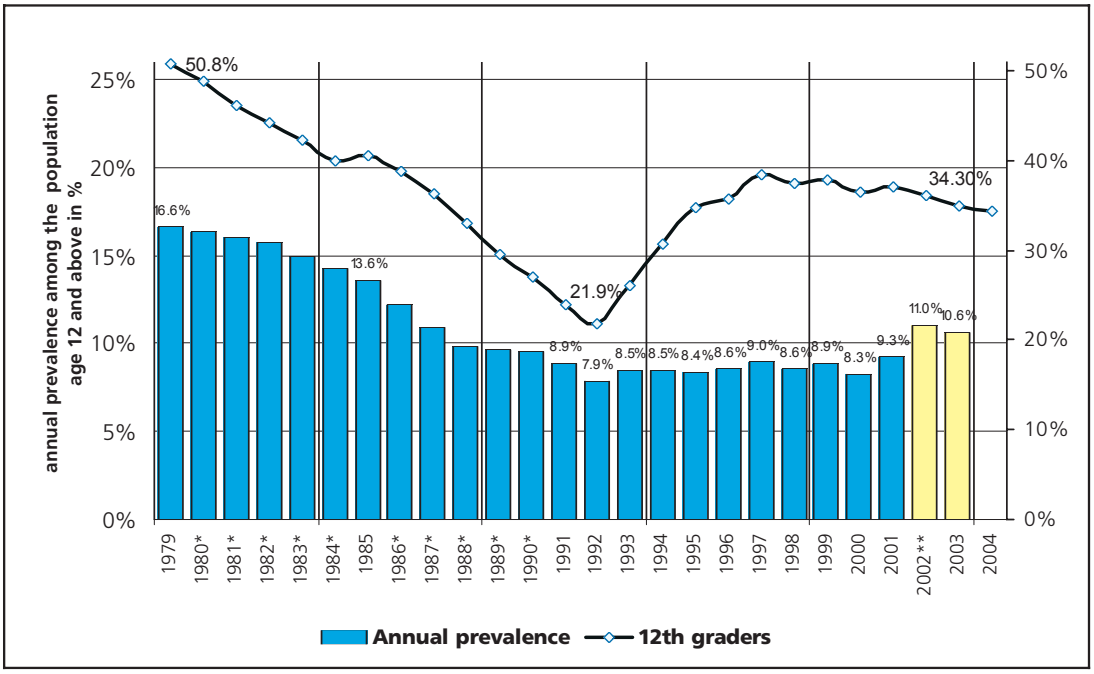
* unweighted average of ESPAD countries (35 in 2003); weighted by population age 15-19 and comparing only results from same countries: 12% in 1995 to 17.6% in 1999 and 17.5% in 1999 to 20.4% in 2003 for all students in Europe.

Sources: Council of Europe, *The ESPAD Report 2003 - Alcohol and Other Drug Use Among Students in 35 European Countries*, previous ESPAD reports (1999 and 1995) and national Govt. reports.

24 SAMHSA, National Household Survey on Drug Abuse, 2000 and previous years; SAMHSA, *National Survey on Drug Use and Health, 2002-2003*, NIDA, *Monitoring the Future*.

25 Australian Institute of Health and Welfare, *The 2004 National Drug Strategy Household Survey*.

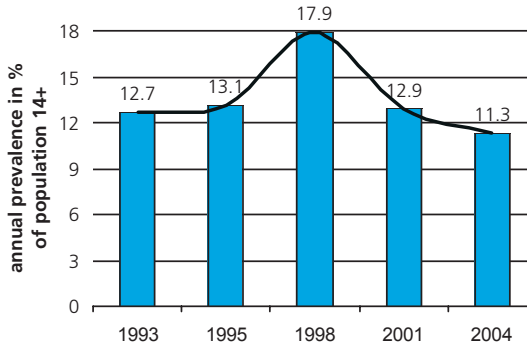
Fig. 49: USA: Cannabis use - annual prevalence among the general population (age 12 years and above) and among high-school students (12th graders), 1979-2004



* estimates
** annual prevalence rates for 2002 and 2003 are not directly comparable with those of previous years due to changes in methodology.

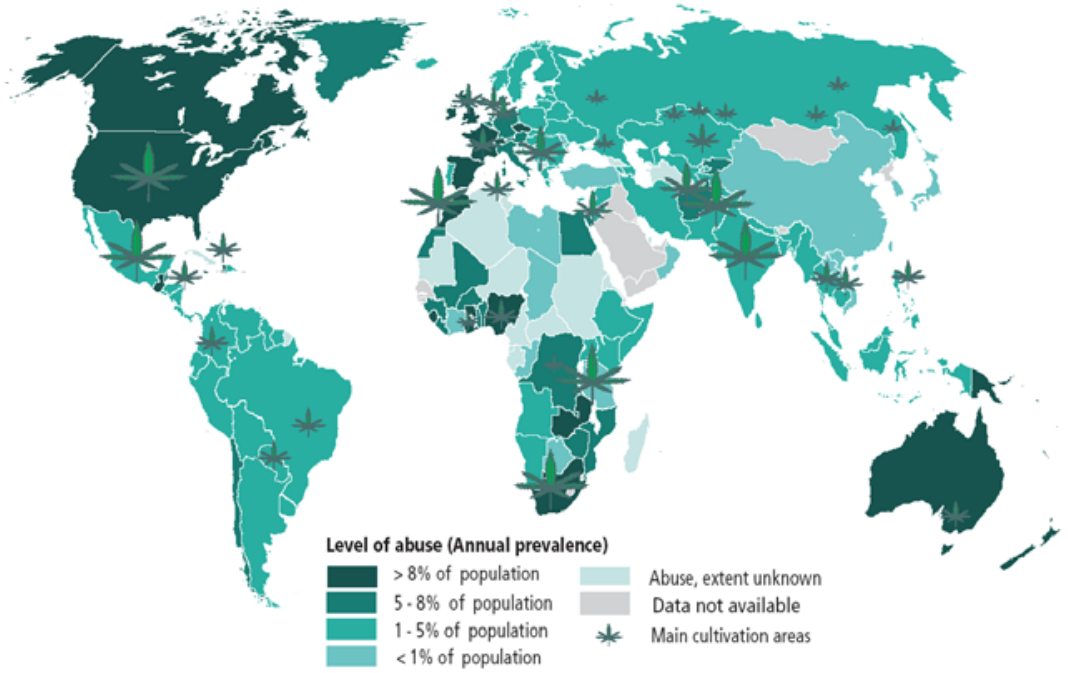
Sources: SAMHSA, National Household Survey on Drug Abuse, 2000 and previous years; SAMHSA, National Survey on Drug Use and Health, 2002-2003, NIDA, Monitoring the Future.

Fig. 50: Annual prevalence of cannabis use among the general population in Australia, 1993-2004

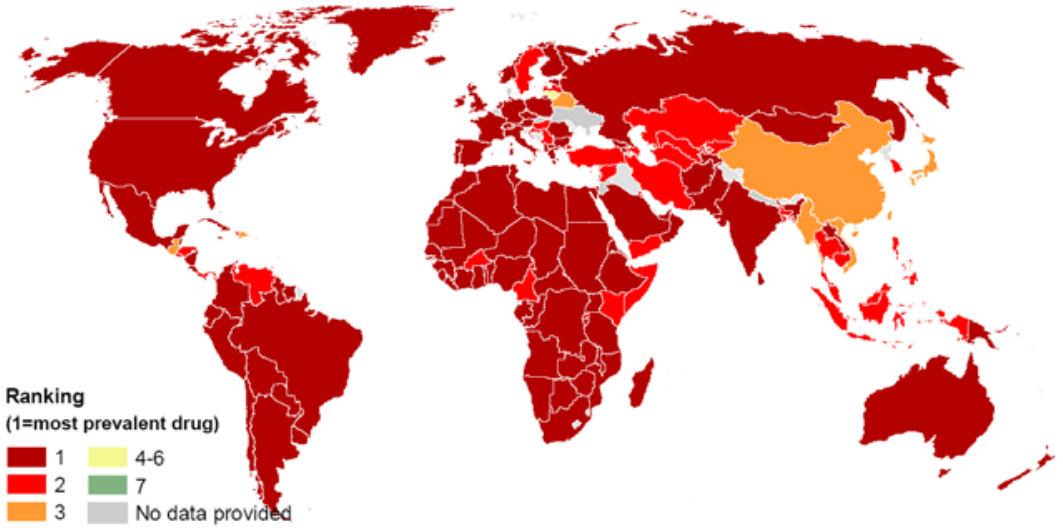


Source: Australian Institute of Health and Welfare, *The 2004 National Drug Strategy Household Survey.*

Map 16: Use of cannabis 2002-2003 (or latest year available)

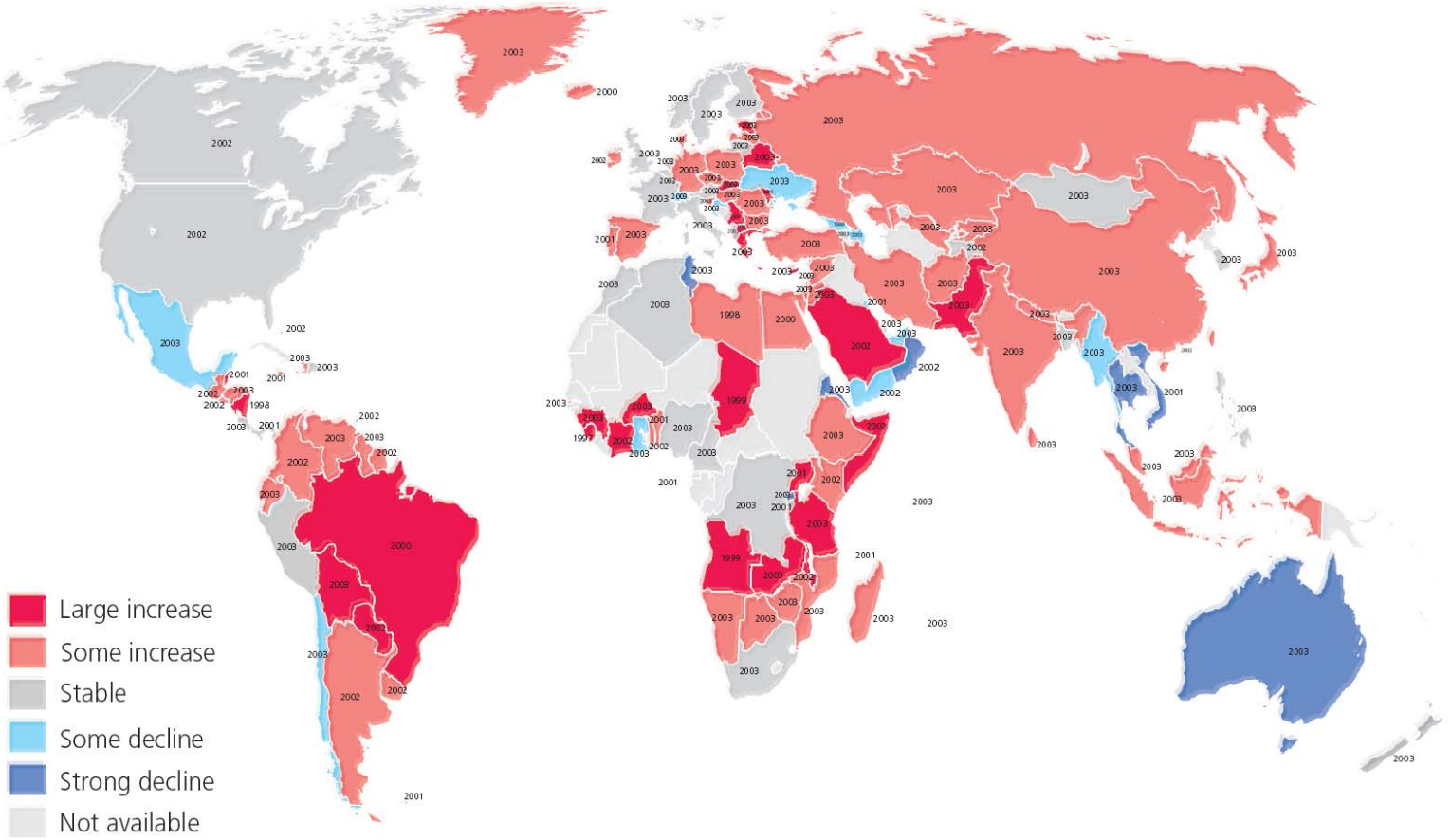


Map 17: Ranking of cannabis in order of prevalence in 2003 (or latest year available)



Sources: UNODC Annual Reports Questionnaires data, SAMSHA US National Household Survey on Drug Abuse, Iranian Ministry of Health, Rapid Assessement Study and UNODC ARQ,Council of Europe, ESPAD.

Map 18: Changes in use of cannabis, 2003 (or latest year available)



Source: UNODC Annual Reports Questionnaire Data and national reports.

1.5 Amphetamine-type stimulants

1.5.1 Production

Global ATS production was above 400 mt

Based on ATS consumption estimates, ATS seizure data and ATS precursor seizures, UNODC estimates a total ATS production[26] of 422 mt for the year 2003 (range: 323-542 mt). The total is composed of around 332 mt of 'amphetamines' (mainly methamphetamine and, to a lesser extent, amphetamine and related synthetic stimulants) and 90 mt of 'ecstasy' (mainly MDMA). While estimates for 2003 show a similar order of magnitude, they are slightly lower than the estimates for the years 2000/01 (523 mt; range: 390-631 mt).

Production of amphetamines is concentrated in East and South-East Asia, North America and, to a lesser extent in Europe, while ecstasy production is concentrated in Europe and, to a lesser extent, in North America.

UNODC estimates that about half of global production of amphetamines takes place in East and South-East Asia, a third in North America and about 15% in Europe, mostly in West and Central Europe. About 78% of global ecstasy is produced in Europe (mostly in Western and Central Europe), 14% in North America and 5% in East and South-East Asia.

Globally the number of dismantled ATS laboratories increased from 547 in 1990 to 7,028 in 2000 and 11,253 in 2003. While much of the increase in the 1990s was a reflection of the growth in ATS production, there are indications that the ongoing dismantling of laboratories over the last few years actually helped to reduce production. Most dismantled ATS laboratories were producing methamphetamine.

The number of ATS laboratories dismantled increased, while the amount of ATS seizures, precursor seizures, and consumption estimates declined.

Lower levels of precursor seizures, lower levels of end-product seizures and lower levels of ATS consumption suggest that overall ATS production – following a decade of massive increases - may have declined over the last few years, though still operating at far higher levels than in the 1990s. ATS production will likely recover,

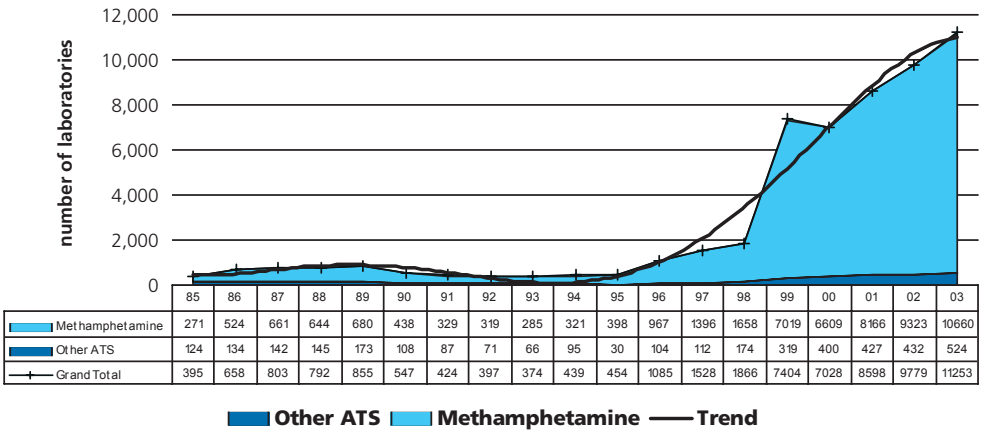
Table 9. Production estimates of amphetamine-type stimulants, 2003

Based on:	Amphetamine and methamphetamine	Ecstasy	Total
Consumption	300.9	101.6	402.5
Drug seizures	378 - 397	45.3 - 64.7	323 - 461
Precursor seizures	281 - 401	98.4 - 141	379 - 542
Overall range of estimates	**278 - 401**	**45.3 - 141**	**323 - 542**
Average of all estimates	**332**	**90.2**	**422**

Source: UNODC, UNODC estimates based on Annual Reports Questionnaire Data/DELTA.

26 Only indirect methods are available to estimate the size of ATS production.

Fig. 51: Number of ATS laboratories dismantled



	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03
Methamphetamine	271	524	661	644	680	438	329	319	285	321	398	967	1396	1658	7019	6609	8166	9323	10660
Other ATS	124	134	142	145	173	108	87	71	66	95	30	104	112	174	319	400	427	432	524
Grand Total	395	658	803	792	855	547	424	397	374	439	454	1085	1528	1866	7404	7028	8598	9779	11253

Source: UNODC, Annual Reports Questionnaire Data.

however, unless pressure to fight ATS production, trafficking and abuse is continued.

The main methamphetamine production sites in Asia are in China, Myanmar and the Philippines.

Overall, 23 source countries for the production of methamphetamine have been identified over the 2002/03 period. The main origin of methamphetamine production in Asia is in China, Myanmar and the Philippines. China, followed by the Philippines and Myanmar, dismantled the most methamphetamine laboratories in Asia; in terms of output, production levels seem to be of similar magnitudes in China and in Myanmar, though methamphetamine production in the Philippines appears to have increased. Most of the methamphetamine production in China is located in south-eastern China, in Guangdong Province (which surrounds Hong Kong) and, to a lesser extent, in neighbouring Fujian province, located off the coast of Taiwan. In addition, important levels of methamphetamine production are found in Taiwan, province of China. China, together with India, is one of the main sources of ephedrine and pseudo-ephedrine, the main precursor chemicals used to manufacture methamphetamine. Improved control mechanisms in both China and India have, however, assisted in curbing clandestine ephedrine and pseudo-ephedrine exports in recent years. Methamphetamine production in Myanmar is mainly encountered in the Shan state (notably in the Wa region), bordering China.

Methamphetamine production in Thailand - according to information provided by the Thai authorities - has largely ceased to exist. The main origin of North American methamphetamine imports from Asia are the

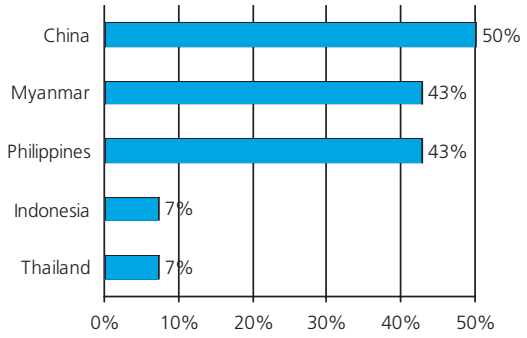
Table 10: Changes in ATS indicators: 2000-2003

Consumption		ATS seizures		Methamphetamine precursor seizures		ATS precursor seizures	Ecstasy precursor seizures		
	ATS users (in million)	ATS seizures (in tons)	Ecstasy (in tons)	Ephedrine (in tons)	Pseudo-ephedrine (in tons)	P2P (in '000 litres)	3-4-MDP-2-P (in '000 litres)	Safrole (in '000 litres)	Piperonal (in tons)
2000	29.6	43.6	5.1	18.3	45.4	7.1	14.4	39.7	3.1
2003	26.2	27.7	4.2	10.3	17.3	6.1	5.5	2.5	0
Change	**-11%**	**-36%**	**-18%**	**-44%**	**-62%**	**-14%**	**-62%**	**-94%**	**-100%**

Sources: UNODC, Annual Reports Questionnaire Data/DELTA; INCB, 2004, *Precursors and chemicals frequently used in the illicit manufacture of narcotic drugs and psychotropic substances*, New York 2005.

Philippines, followed by China. European imports likely transit Thailand, most probably originating in Myanmar. Philippines is a lesser supplier. Overseas exports of South-East Asian methamphetamine are, however, still very limited.

Fig. 52: Origin* of methamphetamine as reported by Asian countries, 2002/03



* Number of times a country was identified by other countries as a source country for methamphetamine, expressed as a proportion of countries providing such information in 2002/03 (N =14). In general, it must be stressed that the reporting of a country as a 'source country' or as a 'country of origin' does not mean that drugs are actually produced in such a country.
' Origin' usually refers to the countries to which drug shipments could be traced back. In a majority of cases this coincides, however, with the locations where the drugs are actually produced.

Source: UNODC, Annual Reports Questionnaire Data.

The main methamphetamine production sites in the Americas are the United States, Mexico and Canada.

The main origin of methamphetamine production in the Americas are the United States, producing exclusively for the domestic market, followed by Mexico and, to a lesser extent, by Canada. Criminal groups of Mexican origin are heavily involved in methamphetamine production in the USA and in Mexico. The US authorities continue to dismantle the largest numbers of methamphetamine laboratories worldwide. Methamphetamine production in the USA has been traditionally concentrated in California and several neighbouring states, though it is spreading to the rest of the country. Most of the 'super-labs', however, continue to be located in California. Methamphetamine imports from Asia are of only limited importance. There is no information on exports of methamphetamine produced in North America to other regions.

Methamphetamine production in Oceania appears to have increased in recent years.

Methamphetamine production in the Oceania region is concentrated in Australia and, at lower levels, in New Zealand. Methamphetamine production in Australia takes place in practically all states, though it is particularly concentrated in Queensland. In addition to locally produced methamphetamine, there are also imports of methamphetamine produced in South-East Asia. Rapidly rising laboratory seizures have had no significant impact on prices and purities – suggesting that overall production increased in recent years. There is no indication, thus far, that this translated into more people consuming methamphetamine. The number of methamphetamine/amphetamine users even declined slightly in Australia between 2001 and 2004.

Methamphetamine production in Europe continues to be very limited…

Thus far, large-scale methamphetamine production and consumption in Europe has not occurred. Methamphetamine continues to be largely limited to the Czech Republic and some of the Baltic states. In addition, some limited imports of methamphetamine from South-East Asia (Thailand and the Philippines) have taken place in recent years.

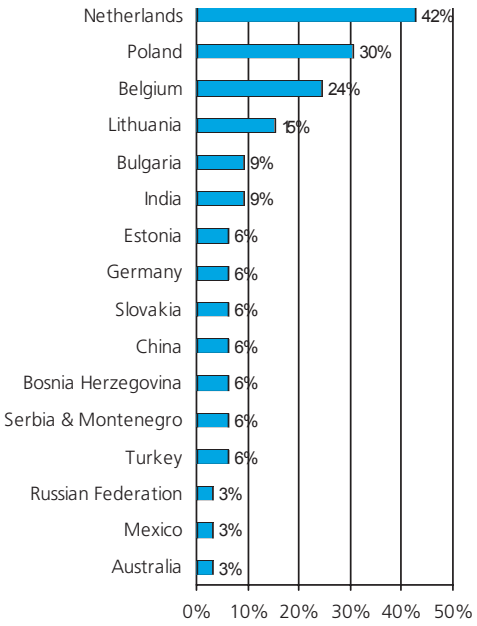
… while amphetamine production is largely concentrated in Europe.

The main source countries for amphetamine – the Netherlands, Poland and Belgium – are all located in Western and Central Europe[27]. In addition, the Baltic states (Lithuania and Estonia) and Bulgaria play an important role in the production of amphetamine. Amphetamine production outside Europe takes place primarily in North America and in the Oceania region. There are also reports of amphetamine production in East and South-East Asia; however, it is not always clear whether the substances produced are in fact amphetamine, or methamphetamine. The key precursor chemical for the manufacture of amphetamine, P-2-P (also

27 Overall 36 countries have been identified by member states as source countries for amphetamine production in 2003.

known as BMK) continues to originate in China. However, there have been cases of clandestine manufacture of P-2-P out of phenylactic acid (a 'pre-precursor') reported in the Russian Federation and the Ukraine and some indications for such production in Lithuania and Poland.

Fig. 53: Origin* of amphetamine in 2003



* Number of times a country was identified by other countries as a source country for ecstasy, expressed as a proportion of countries providing such information in 2003 (N =33).

Source: UNODC, Annual Reports Questionnaire Data.

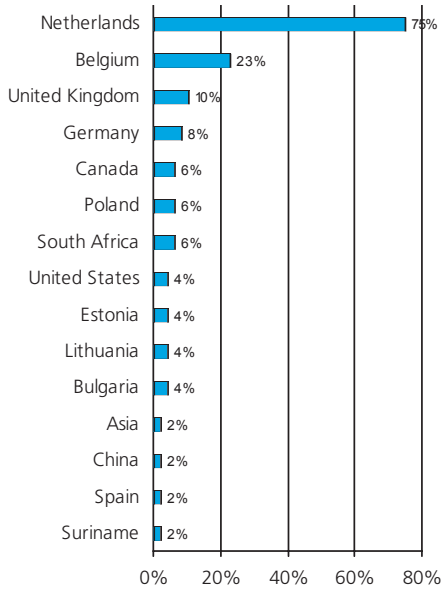
Markets in Africa and South-America supplied by diverted licit ATS.

Overall production of ATS continues to be limited in South America and in Africa, although in South Africa clandestine ATS production[28] has increased in recent years. At the same time, surveys suggest that ATS consumption in both Africa and South-America are far from negligible. There appears to be an ongoing supply of these markets with diverted licit ATS.

The Netherlands and Belgium remain the most important ecstasy source countries.

As in previous years, the Netherlands (quoted by 75% of all countries to be among the three main source countries), followed, by Belgium (23%) produced the most ecstasy in the world. Over the 2002-2003 period a total of 29 ecstasy producing countries were identified by UNODC member states. Most of the precursors for the manufacture of MDMA, notably 3,4-MDP-2-P (also known as PMK), originate in China. However, there have also been reports of the illicit manufacture of PMK in the Russian Federation, produced out of sassafras oil (a pre-precursor) smuggled into the Russian Federation from Viet Nam.

Fig. 54: Origin* of ecstasy in 2003



* Number of times a country was identified by other countries as a source country for ecstasy, expressed as a proportion of countries providing such information in 2003 (N = 48)

Source: UNODC, Annual Reports Questionnaire Data.

28 Methcathinone and increasingly methamphetamine.

1.5.2 Trafficking

1.5.2.1 Overview

ATS seizures started increasing again in 2003.

After having declined over the 2000-2002 period by 42%, ATS seizures increased by 13% in 2003 to 32 mt, five times higher than a decade earlier but still less than in 1999, 2000 or 2001. The highest ATS seizures in 2003 were reported by Thailand (20% of the total), followed by China (18%), the United States (14%), the Philippines (10%), the UK, the Netherlands and Australia (6% each). Trafficking, production and consumption growth were more pronounced for ATS than for the other two main categories of problem drugs. Over the 1990-2003 period, ATS seizures rose almost seven fold while heroin and morphine seizures tripled and cocaine seizures almost doubled. About 68% of global ATS seizures in 2003 were of methamphetamine, 17% of amphetamine and 13% of ecstasy.

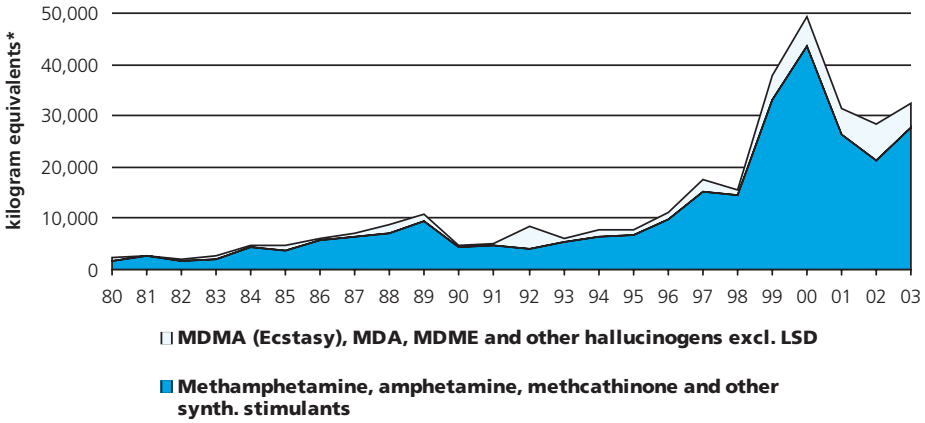
ATS seizures are concentrated in East and South-East Asia, followed by Western Europe and North America

Globally, 52% of all ATS seizures in 2003 were made by countries in East and South-East Asia, 22% by countries in Western and Central Europe and 16% by countries in North America.

Seizures of amphetamines rose by 29% in 2003. However, amphetamines seizures are still 37% less than in the peak year of 2000. In contrast to opiate or cocaine trafficking, most the of trafficking in the 'amphetamines' continues to be *intra*-regional; *inter*-regional trafficking is still largely limited to the precursor trade.

The two most important 'amphetamines' are methamphetamine and amphetamine (see below). In addition, trafficking in methcathinone is of some importance in a number of CIS countries (locally known as ephedrone), in some parts of the USA, and – as a recent phenomenon – in South Africa. Methcathinone is usually locally produced and trafficking does not involve the crossing of any borders. In the Near and Middle East, trafficking in fenetylline (captagon) continues to play an important role. This is usually produced in clandestine laboratories in South-Eastern Europe (mainly Bulgaria) and trafficked via Turkey to Syria, Jordan and Saudi Arabia.

Fig. 55: Seizures of amphetamine-type stimulants, 1980-2003



* Seizures reported in kilograms and in units; a unit ('pill') of ecstasy was assumed to contain on average 100 mg of MDMA; a 'unit' of amphetamine / methamphetamine was assumed to contain 30 mg of mphetamine / methamphetamine.

Source: UNODC, Annual Reports Questionnaire Data.

1.5.2.2 Methamphetamine

Methamphetamine seizures continue to be concentrated in East and South-East Asia…

Methamphetamine seizures increased by 40% in 2003 and are now 3% higher than in 2001, though still 40% less than the peak year of 2000. The largest seizures of methamphetamine in 2003 were reported by Thailand (6.5 mt), China (5.8 mt), the United States (3.9 mt) and the Philippines (3.1 mt), followed by Mexico (0.7 ton), Australia and Japan (0.5 ton each) and the Lao PDR and Myanmar (0.1 ton each).

Methamphetamine seizures continue to be concentrated in East and South-East Asia (76% in 2003). Two distinct methamphetamine products are found in East and South-East Asia: methamphetamine tablets (often mixed with other substances, such as ephedrine and caffeine) and 'ice' (high-quality, smokeable, crystal-methamphetamine). Trafficking in methamphetamine tablets is most common in South-East Asia (Myanmar, Thailand, southern China, Lao PDR, Vietnam, Cambodia, Indonesia, Malaysia) while trafficking in 'ice' is more common in East-Asia (Japan, north-eastern China, Taiwan Province of China, Korea, as well as the Philippines). The main source countries in East and South-East Asia in 2003 were Myanmar/Thailand, followed by China and the Philippines. Seizures in Thailand (the world's largest ATS market until 2002) fell by 25% as compared to a year earlier, reflecting a major crack-down on methamphetamine imports from neighbouring Myanmar in early 2003. As a consequence, the overall size of the Thai methamphetamine market declined substantially in 2003. Methamphetamine seizures in China, in contrast, increased, as some of the methamphetamine produced in Myanmar was apparently re-directed to markets in that country. There was also a significant increase of methamphetamine seizures in the Philippines, reflecting increasing levels of methamphetamine production following the crackdown on production facilities in other source countries. Seizures in Japan, financially the most lucrative market for methamphetamine in East Asia, increased slightly in 2003 (+11%), though they were still lower than in 2000 (-52%). This appears to have been the result of a reduction of trafficking activities. A shortage on the Japanese market, resulting in rising methamphetamine prices, points in this direction. Nonetheless, the Japanese *Yakuza* (organized crime) continues to play a significant role in the import and distribution of methamphetamine: accounting for 41% of all methamphetamine related arrests in 2003. Most of the methamphetamine seized in Japan in 2003 originated in China and Hong Kong SAR of China, though the Philippines and, to a lesser extent Malaysia, also emerged as important source countries. A similar perception of market trends was also expressed by the South Korean authorities, who reported that 67% of the methamphetamine originated in China while the share of Philippines methamphetamine increased strongly. Methamphetamine prices also increased in the Republic of Korea.

…but rose strongly in North America.

The proportion of global methamphetamine seizures made in North America rose from 10% in 2002 to 21% in 2003. A strong (3-fold) increase in methamphetamine seizures was reported from the United States, reflecting increasing levels of domestic methamphetamine production and increasing imports from neighbouring Mexico. Increased enforcement and prevention efforts, however, appear to have prevented increased use. Methamphetamine seizures in Mexico rose by almost 60% in 2003. The main form of methamphetamine available in North America is powder methamphetamine; smaller quantities of 'ice' are also available.

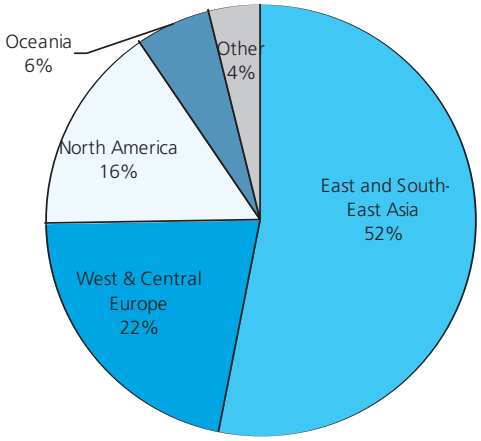
1.5.2.3 Amphetamine

Amphetamine seizures continue to be concentrated in Europe - and are rising…

Global amphetamine seizures (5.4 mt) are back to the levels reported in 1997/98, having increased by 22% in 2003. Amphetamine seizures continue to be concentrated in Europe (>90%), notably in Western and Central Europe (79%). However, the share of West and Central Europe in global amphetamine seizures has been declining (87% in 2002 and 90% in 2001).

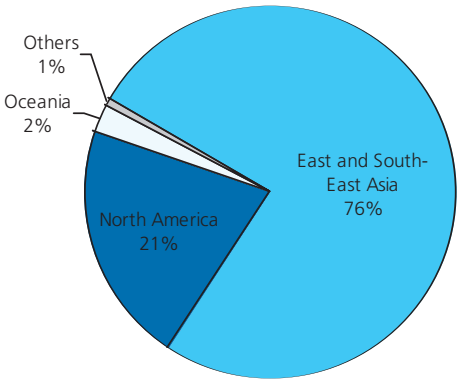
The largest amphetamine seizures in 2003 took place in theUK, followed by the Netherlands, Bulgaria, Germany and Sweden. The main source countries were the Netherlands, followed by Poland and Belgium. International organized crime groups appear to be less involved in amphetamine trafficking than in methamphetamine trafficking. The retail market for amphetamine usually consists of large numbers of small trafficking groups who purchase the drugs in the main source countries and then sell them locally. Recently, some of the established drug trafficking groups have started to smuggle amphetamine along with drugs they normally move.

Fig. 56: Breakdown of ATS seizures in 2003 by sub-regions (N = 32 metric tons)



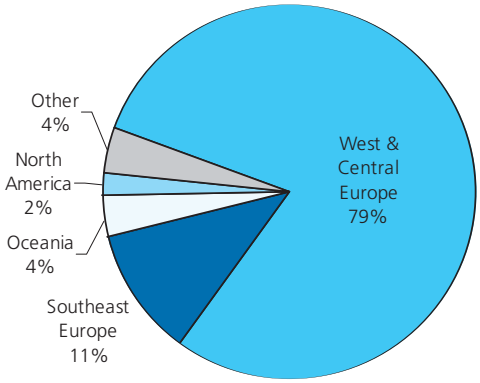
Source: UNODC, Annual Report Questionnaire Data / DELTA.

Fig. 57: Breakdown of methamphetamine seizures in 2003 (N = 21.6 metric tons)



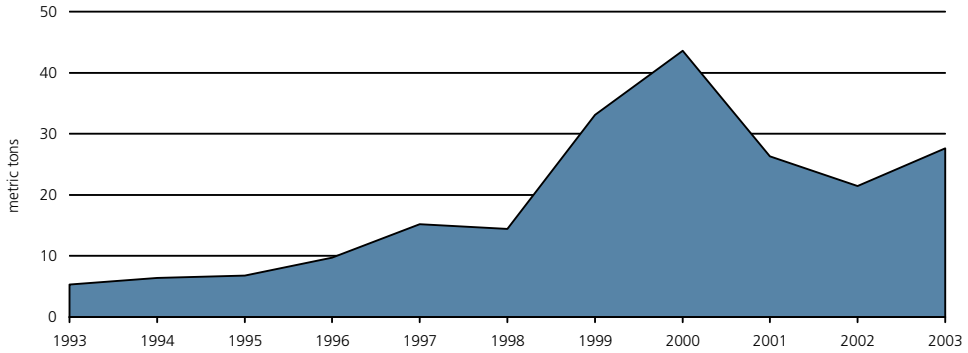
Source: UNODC, Annual Report Questionnaire Data / DELTA.

Fig. 58: Breakdown of amphetamine seizures by sub-region in 2003 (N = 5.6 metric tons)



Source: UNODC, Annual Report Questionnaire Data / DELTA.

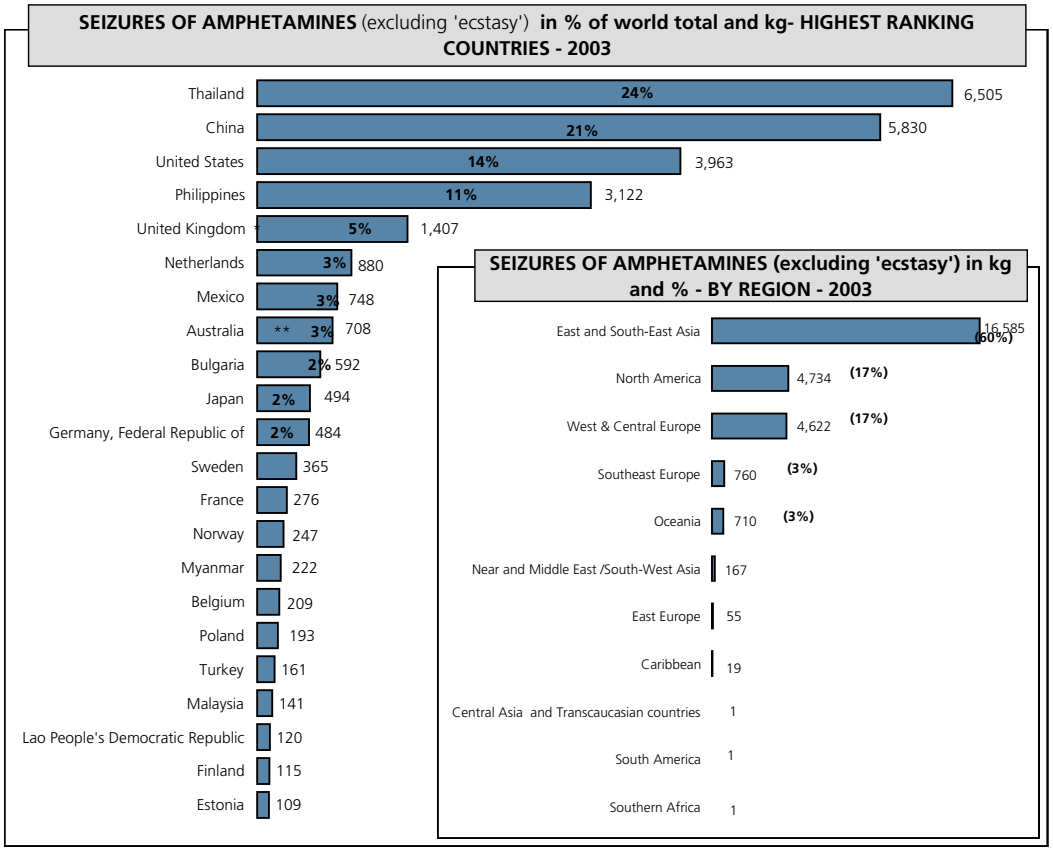
Fig. 59: Global seizures of amphetamines*, 1993 - 2003



* Excluding 'Ecstasy'

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Metric tons	5	6	7	10	15	14	33	44	26	21	27

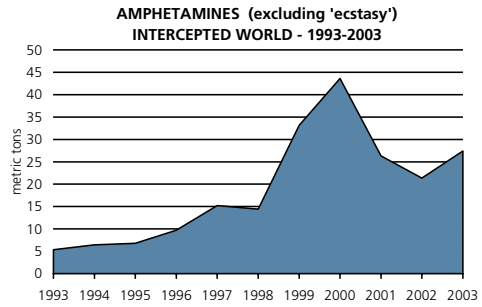
* metric ton equivalents. 1 unit assumed to be equivalent to 30mg.

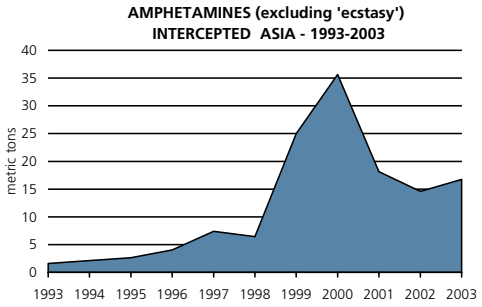


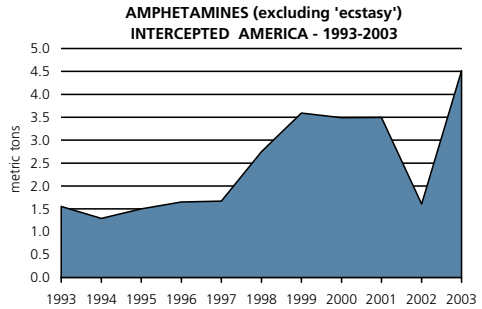
* data refer to 2002

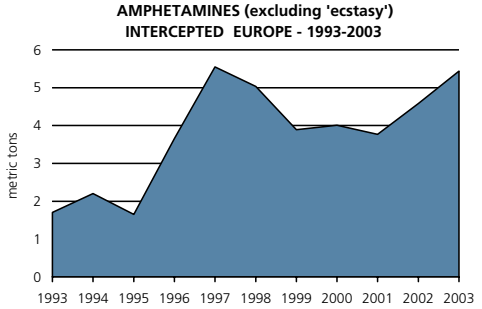
** total seizures reported by national as well as State & Territory law enforcement agencies which may result in double counting.

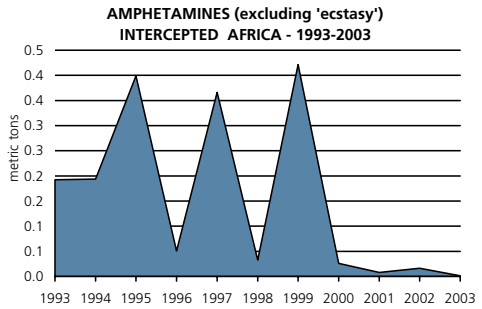
Fig. 60: Global seizures of amphetamines, 1993 - 2003

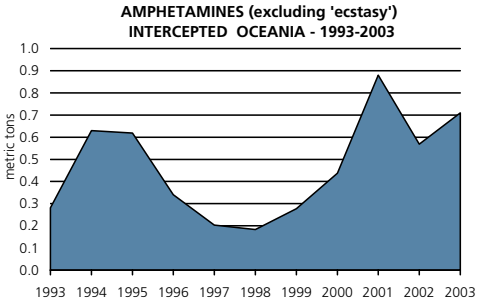




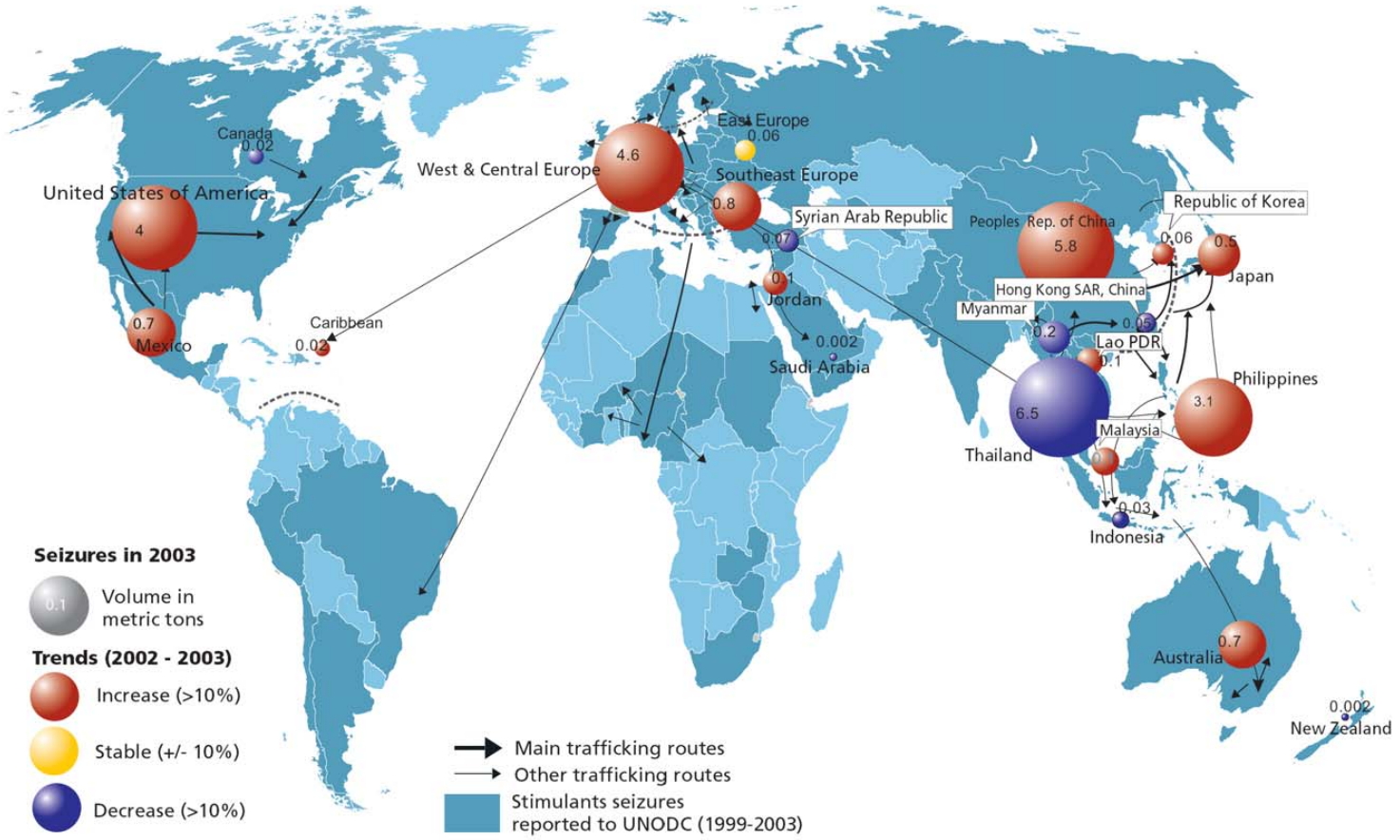








Map 19: Seizures of amphetamine-type stimulants (excluding ecstasy) 2002 - 2003: extent and trends (countries reporting seizures of more than 10 kg.)



Note: Routes shown are not necessarily documented actual routes, but are rather general indications of the directions of illicit drug flows.

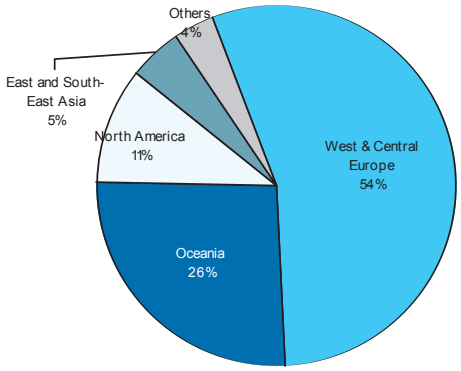
1.5.2.4 Ecstasy

Trafficking in ecstasy remains largely intra-regional within Europe and inter-regional outside Europe.

Ecstasy seizures in kilogram equivalents amounted to 4.3 mt, 37% less than in the peak year of 2002 possibly reflecting a decline of ecstasy production in Europe. Declines in ecstasy seizures were reported from West and Central Europe, as well as from North America, the Caribbean, the Near and Middle East and Southern Africa; in contrast, ecstasy seizures rose strongly in the Oceania region and in East and South-East Asia.

Trafficking in ecstasy remains largely intra-regional within Europe and inter-regional outside Europe, as European countries continue to be the main production locations for MDMA. The main source countries are the Netherlands and Belgium. Source countries outside Europe are, *inter alia,* the United States, Canada, China, Indonesia and South-Africa. The intra-regional distribution of ecstasy within Europe – like trafficking in amphetamine – is undertaken by a large number of rather small drug trafficking groups of various national backgrounds. In contrast, trafficking of ecstasy from Europe to North America and some other regions appears to be mainly controlled by criminal groups of Israeli origin, sometimes with links to Russia, other European countries and the USA. These trafficking groups operate mainly outside Israel, though, in some instances, they have been also involved in trafficking ecstasy from the Netherlands and Belgium to Israel. In addition, criminal groups from the Dominican Republic have also become involved in shipping ecstasy from Europe via the Caribbean to the USA. If seizures over the 2001-2003 period are analysed, the Netherlands accounted for 22% of global seizures, followed by Australia (13%), the United States (12%), the UK (12%), and Belgium (11%).[29]

Fig. 61: Breakdown of ecstasy seizures* by sub-region in 2003 (N = 4.2 mt)

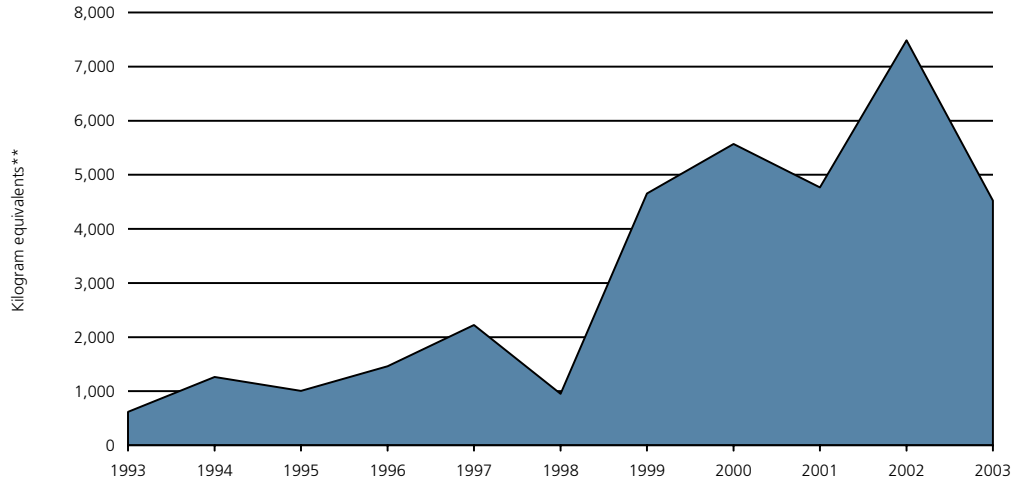


* in kilogram equivalents, using a conversion ratio of 100 mg for an ecstasy pill.

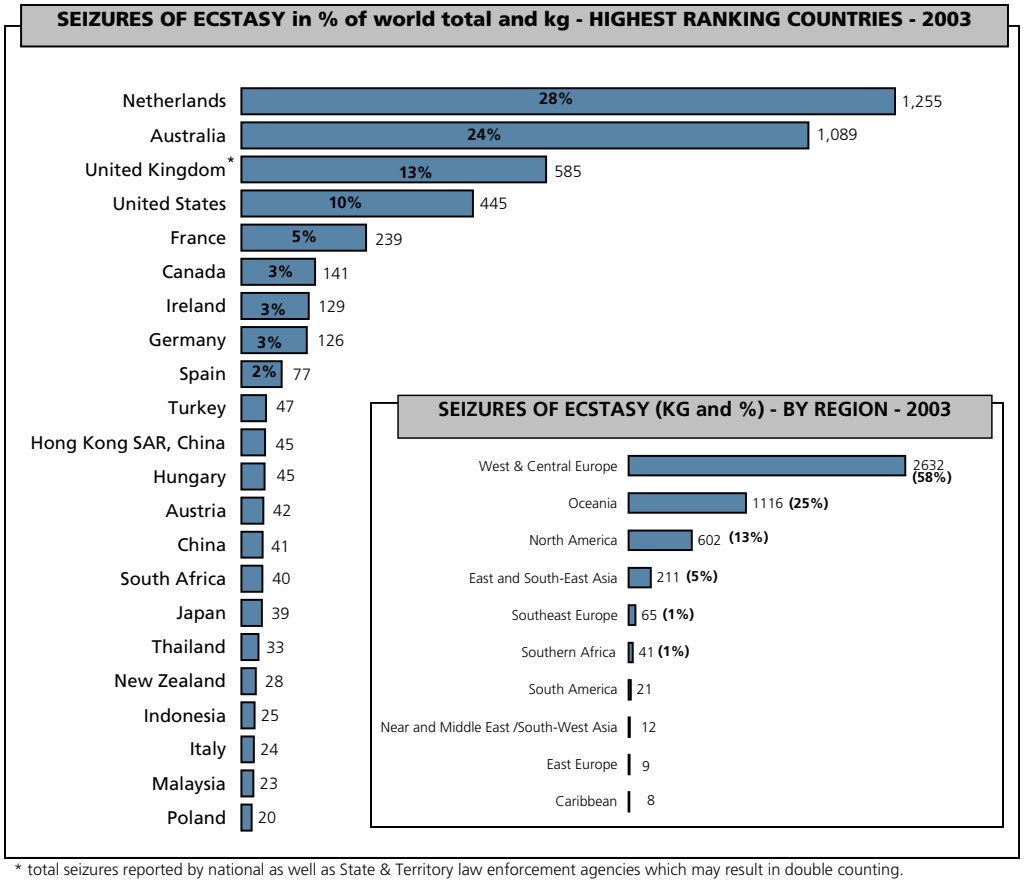
Source: UNODC, Annual Report Questionnaire Data / DELTA.

29 In 2003, the national and the State and Territory law enforcement agencies of Australia seized more than 1 ton of ecstasy (26% of global ecstasy seizures), slightly more than the Netherlands (close to 1 ton or 23% of global seizures).

Fig. 62: Global seizures of ecstasy*, 1993 - 2003

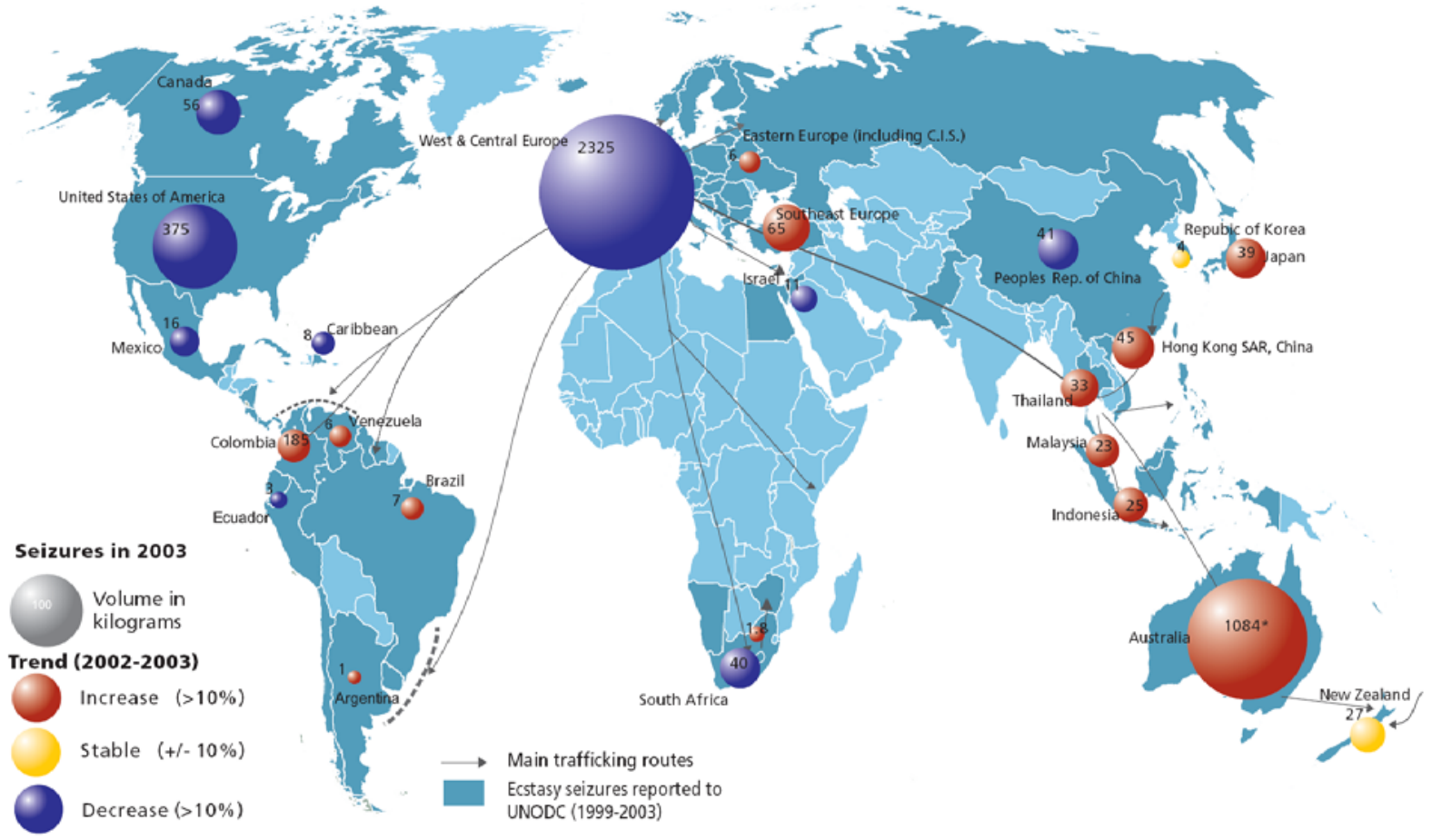


* Reporting on 'Ecstasy' seizures only started with the new ARQ in 2001; before, Ecstasy seizures were included under the category of hallucinogens other than LSD'. Trend data shown above refer to this broader category. In 2003, Ecstasy accounted for 94% of the seizures in this group.
** 1 unit is assumed to be equivalent to 100mg of MDMA.



* total seizures reported by national as well as State & Territory law enforcement agencies which may result in double counting.

Map 20: Seizures of Ecstasy (MDA, MDEA, MDMA) 2002 - 2003: extent and trends (countries reporting seizures of more than 10 kg.)



* sum of seizures reported by national, State & Territory law enforcement agencies.

Note: Routes shown are not necessarily documented actual routes, but are rather general indications of the directions of illicit drug flows.

1.5.3 Abuse

Consumption of amphetamine-type stimulants

Amphetamine-type stimulants (ATS), as defined by the UNODC, consist of amphetamines (amphetamine, methamphetamine), ecstasy (MDMA and related substances), and other synthetic stimulants (methcathinone, phentermine, fenetylline, etc.).

After the opiates, ATS are the main problem drugs in Asia, and in some countries they have overtaken heroin in terms of their contribution to treatment demand. While overall use levels are less than 1% in most regions, ATS are responsible for a substantial share of treatment admissions in Asia (16%), Oceania (13%), North America (12%), and Europe (9%). Most admissions are for methamphetamine and amphetamine dependence, and relatively few are related to ecstasy.

An estimated 26 million people, or 0.6% of the population aged between 15 and 64, used methamphetamine, amphetamine, or related substances in 2003, while about 7.9 million people used ecstasy.

Almost two thirds of the world's amphetamine and methamphetamine users reside in Asia, most of whom are methamphetamine users in East and South-East Asia. But the prevalence of use is highest in the Oceania region (3% of the population age 15-64), followed by East and South-East Asia (1.2%) and North America (1.1%). In all of these markets, methamphetamine dominates as the main ATS. In Europe, in contrast, amphetamine use is more common than methamphetamine use.

Use of ecstasy continues to be concentrated in Europe and North America. West and Central Europe account for a third of global ecstasy use, followed by North America, accounting for almost 30%. More people report having used ecstasy in the last year in the Oceania region (3.1%) than any other region, followed by West and Central Europe (0.9%) and North America (0.8%).

Global ATS use seems to have declined in 2003, largely due to decreasing methamphetamine use in Thailand

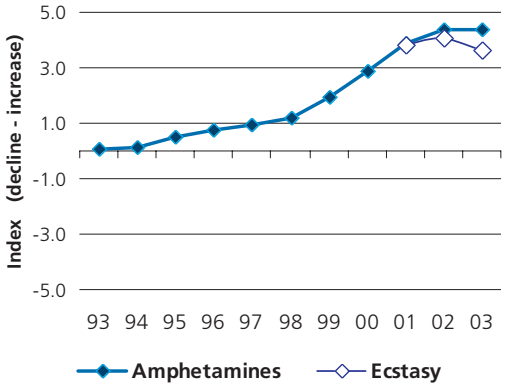
Table 11: Annual prevalence estimates of ATS use: 2003-2004

	Use of amphetamines		Use of ecstasy	
	No. or users	*in % of population 15-64 years*	*No. of users*	*in % of population 15-64 years*
EUROPE	2,670,000	0.5	3,030,000	0.6
West & Central Europe	2,160,000	0.7	2,670,000	0.9
South-East Europe	180,000	0.2	194,000	0.2
Eastern Europe	330,000	0.2	166,000	0.1
AMERICAS	4,340,000	0.8	2,834,000	0.5
North America	2,980,000	1.1	2,328,000	0.8
South America	1,360,000	0.5	506,000	0.2
ASIA	16,710,000	0.7	1,260,000	0.05
OCEANIA	630,000	3	634,000	3.1
AFRICA	1,810,000	0.4	136,000	0.03
GLOBAL	**26,160,000**	**0.6**	**7,894,000**	**0.2**

Above global average | Around global average | Below global average

Sources: UNODC, Annual Reports Questionnaire data, various Govt. reports, reports of regional bodies, UNODC estimates.

Fig. 63: Drug Use Trend Index - ATS - based on expert opinions (weighted by the estimated number of ATS users), 1993-2003



Source: UNODC, Annual Reports Questionnaire Data.

(formerly the country with the highest prevalence rate) and lower levels of ecstasy use in the USA. Methamphetamine abuse in Japan, one of the world's most lucrative ATS markets, was reported to have remained stable in 2003.

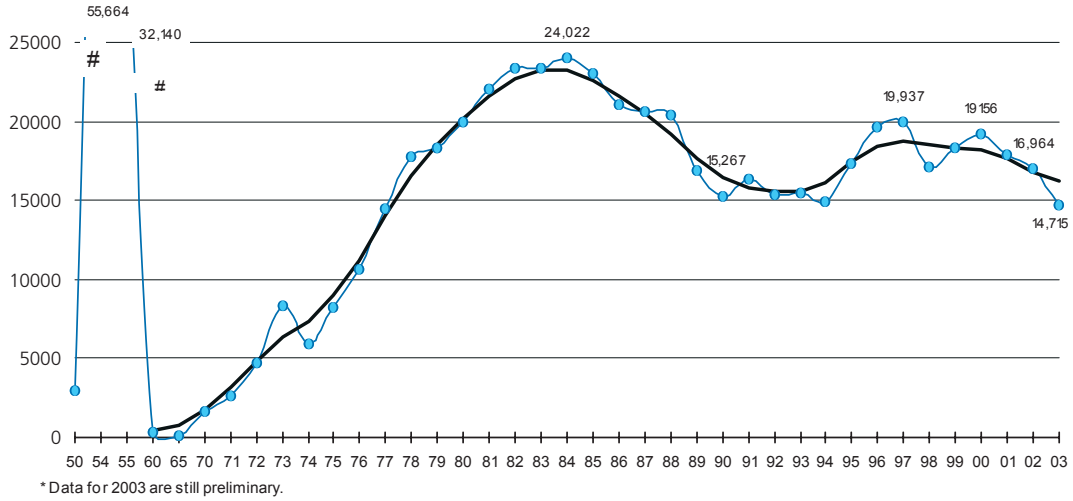
When weighted by the number of ATS users in their respective countries, total expert opinions reported to UNODC suggest that the use of ATS stabilised in 2003, following years of sharp increases in the late 1990s. There are, however, early reports that methamphetamine may again be on the rise in East and South-East Asia in 2004.

European student surveys show that ecstasy use increased over the 1999-2003 period while use of amphetamines declined. Growth in European ATS use was stronger among females than males, leading to less significant gender differences and, in some countries, to higher levels of ATS experimentation by female students (age 15-16) than by their male counterparts.

Following strong increases in the 1990s, use of amphetamines and ecstasy remained basically stable in Central and Eastern Europe over the 1999-2003 period. In Western Europe, amphetamine use declined while ecstasy use continued to increase - though in some countries the opposite trends were observed.

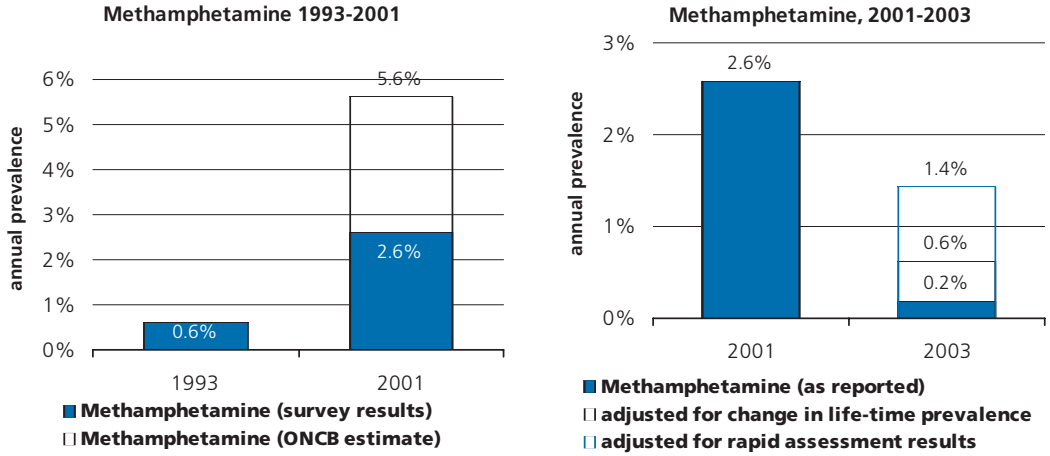
Based on the calculation of unweighted averages, Central and Eastern Europe is already (marginally) ahead of ATS consumption levels in Western Europe, for both amphetamines and for ecstasy. Weighted by population, the average ATS life-time prevalence rates for students, age 15-16, in Western Europe are still slightly higher than the corresponding rates in Central and Eastern Europe.

Fig. 64: Reported violations against the Stimulants Law in Japan, 1950-2003



Sources: Ministry of Health and Social Welfare, National Police Agency of Japan, UNODC, Annual Reports Questionnaire data.

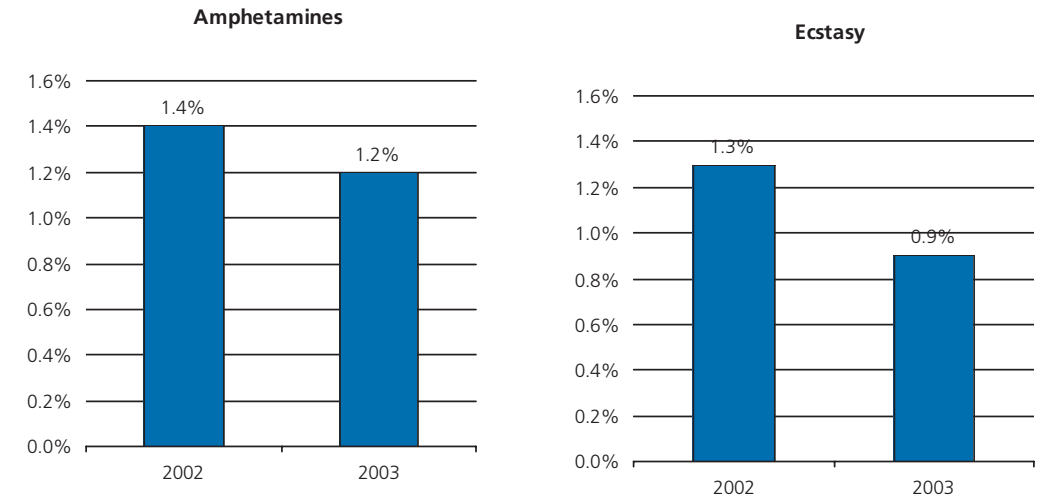
Fig. 65: Changes in the annual prevalence of methamphetamine use in Thailand*, 1993-2003



* All estimates suggest a strong increase of methamphetamine abuse in Thailand in the 1990s. Following the crack-down on the ATS market in Thailand in 2003, household survey data showed a more than 90% decline in methamphetamine use. Some of this reported decline, however, seems to have been a reflection of an increasing reluctance of methamphetamine users to publicly admit their habit. This can be also deduced from a drastically falling life-time prevalence rate over a 2-year period (2001-2003). A parallel rapid assessment study conducted among methamphetamine users in Thailand suggested that the decline was not 90% but around 46% in 2003 - which is still a massive reduction.

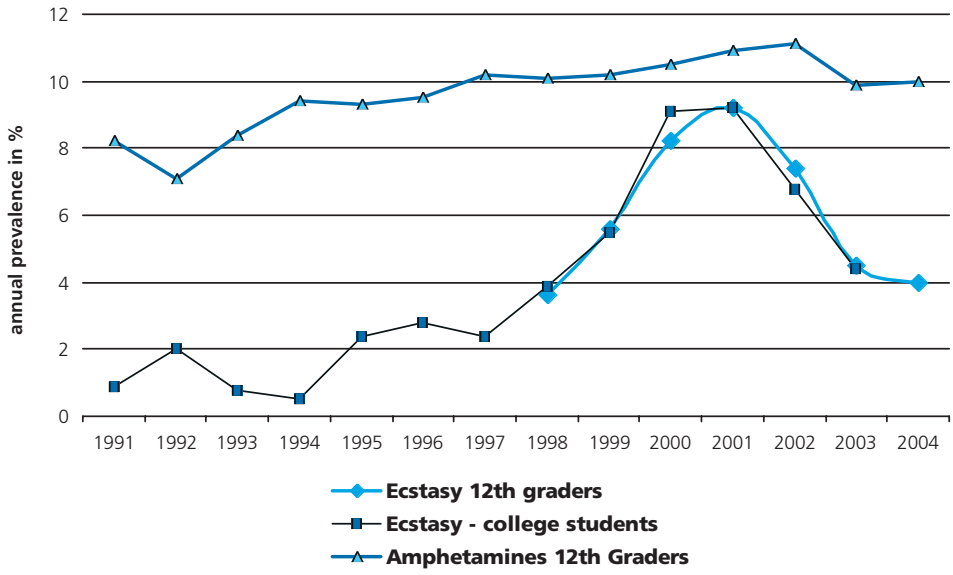
Sources: Thailand Development Research Institute, 1995, ONCB, Thailand Narcotics Annual Report 2002 and 2003, National Household Survey 2003 quoted in UNODC (Regional Centre for East Asia and the Pacific), Regional ATS Update and training meeting - Final Report, 2004.

Fig. 66: Changes in the annual prevalence of ATS use in the USA, 2002-2003 (age 12+)



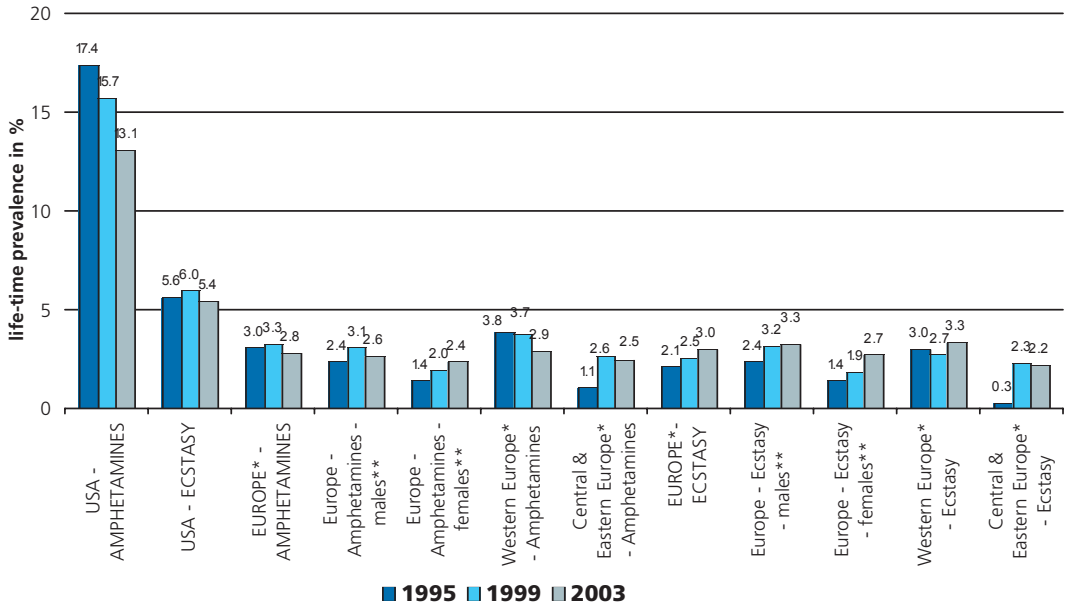
Source: SAMHSA, National Survey on Drug Use and Health, 2002 and 2003.

Fig. 67: Annual prevalence of ATS use among students in the United States, 1991-2004



Source: NIDA, *Monitoring the Future*

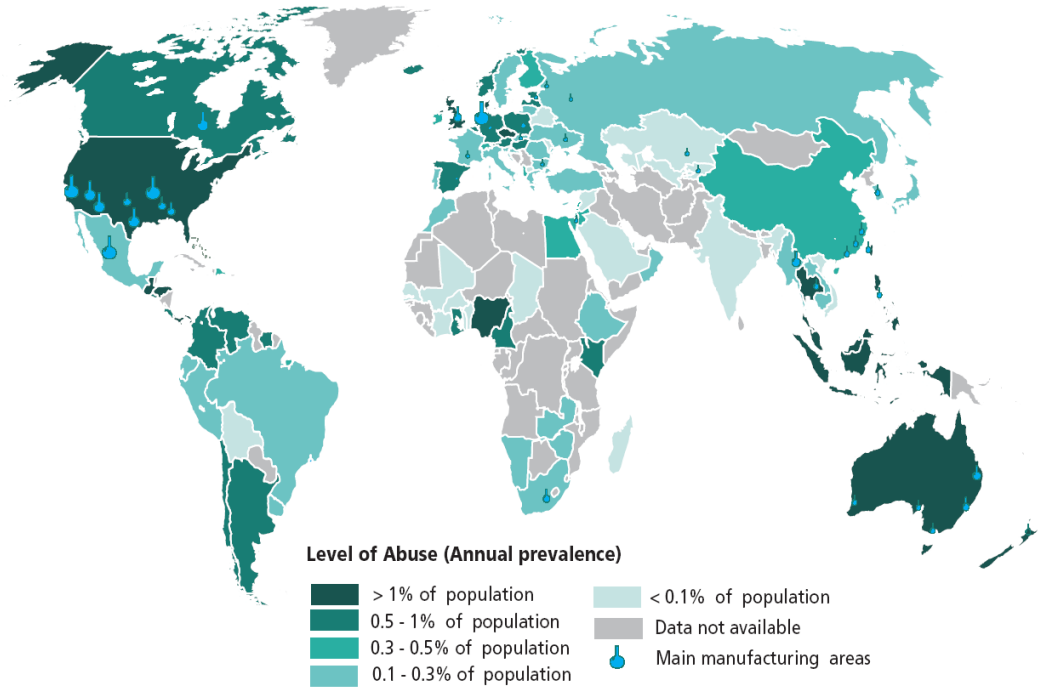
Fig. 68: Life-time prevalence of ATS use among 15-16 year old students in the USA and in Europe, 1995-2003



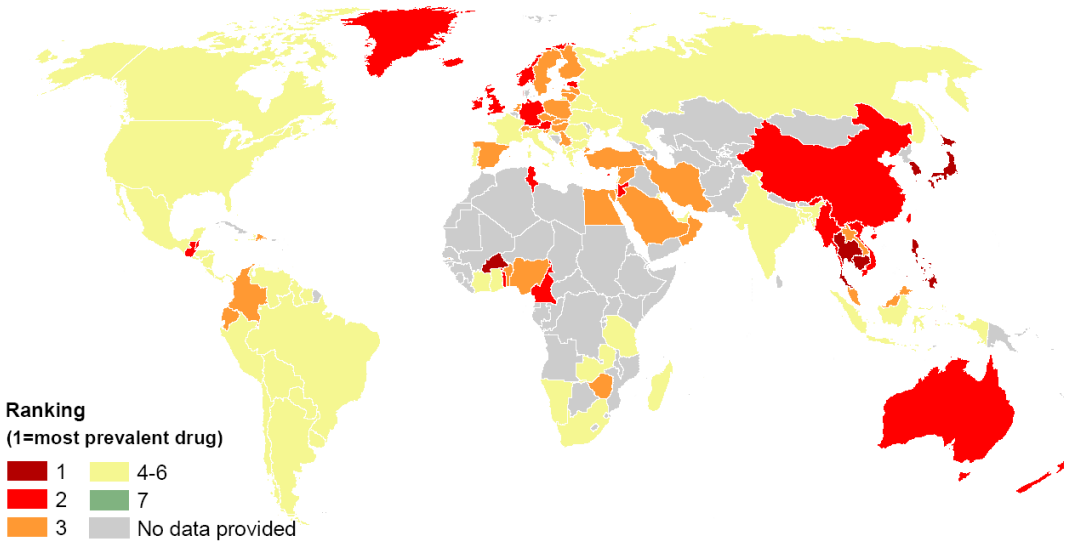
* average weighted by population age 15-19; ** unweighted average

Source: NIDA, *Monitoring the Future* and Council of Europe , The ESPAD Report 2003 - *Alcohol and Other Drug Use Among Students in 35 European Countries*, previous ESPAD reports (1999 and 1995) and national Govt. reports

Map 21: Use of amphetamines in 2003 (or latest year available)

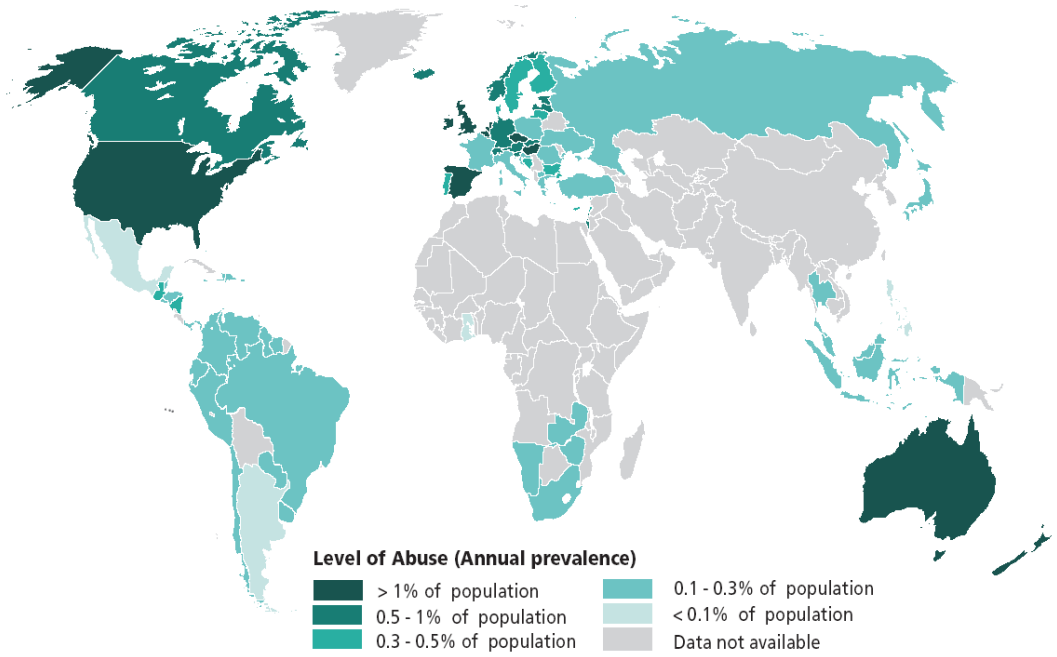


Map 22: Ranking of amphetamine-type stimulants in order of prevalence in 2003 (or latest year available)

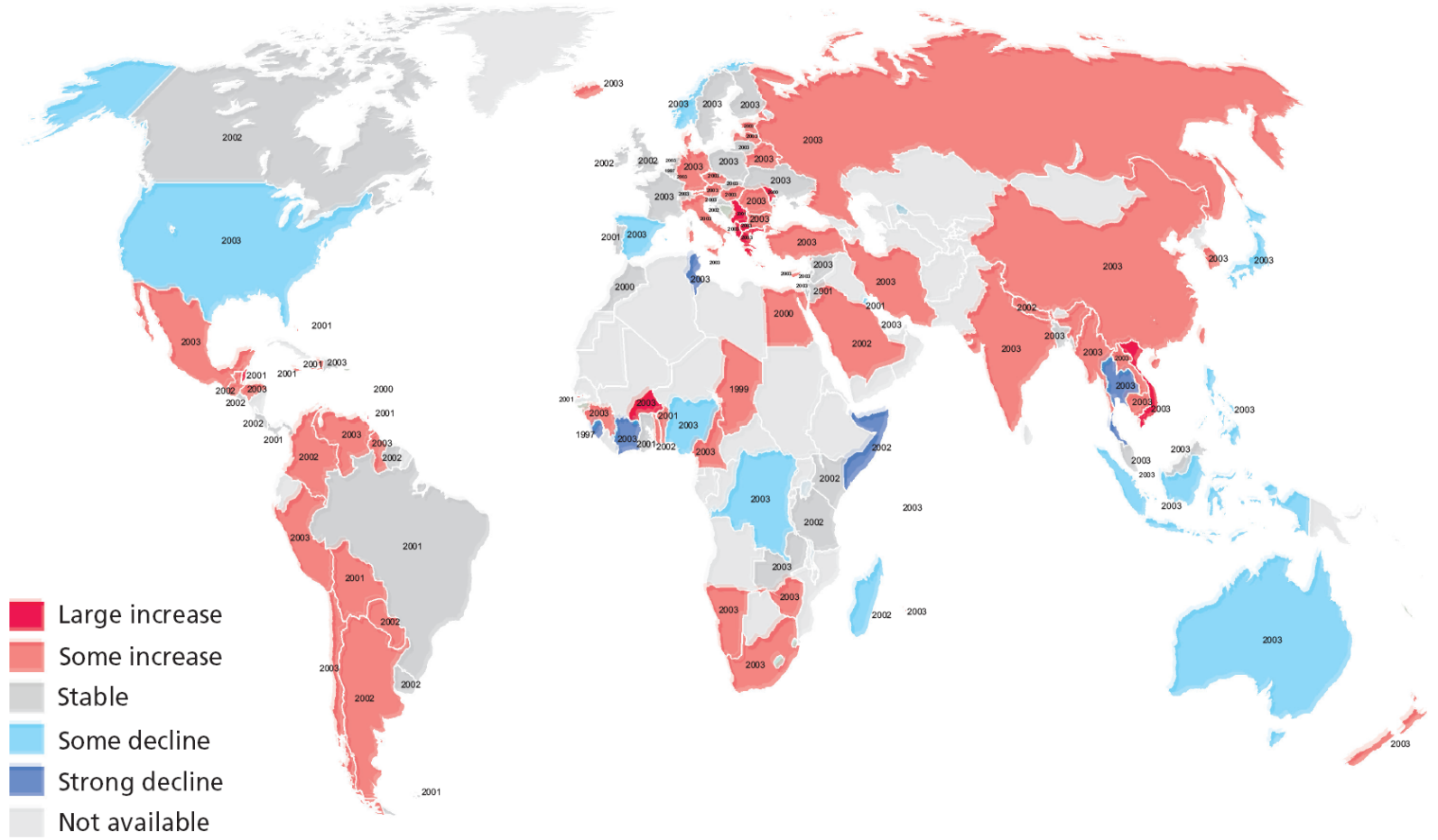


Sources: UNODC Annual Reports Questionnaires data, National Household Surveys on Drug Abuse, UNODC Rapid Assessement Studies, Council of Europe, ESPAD.

Map 23: Use of ecstasy in 2003 (or latest year available)

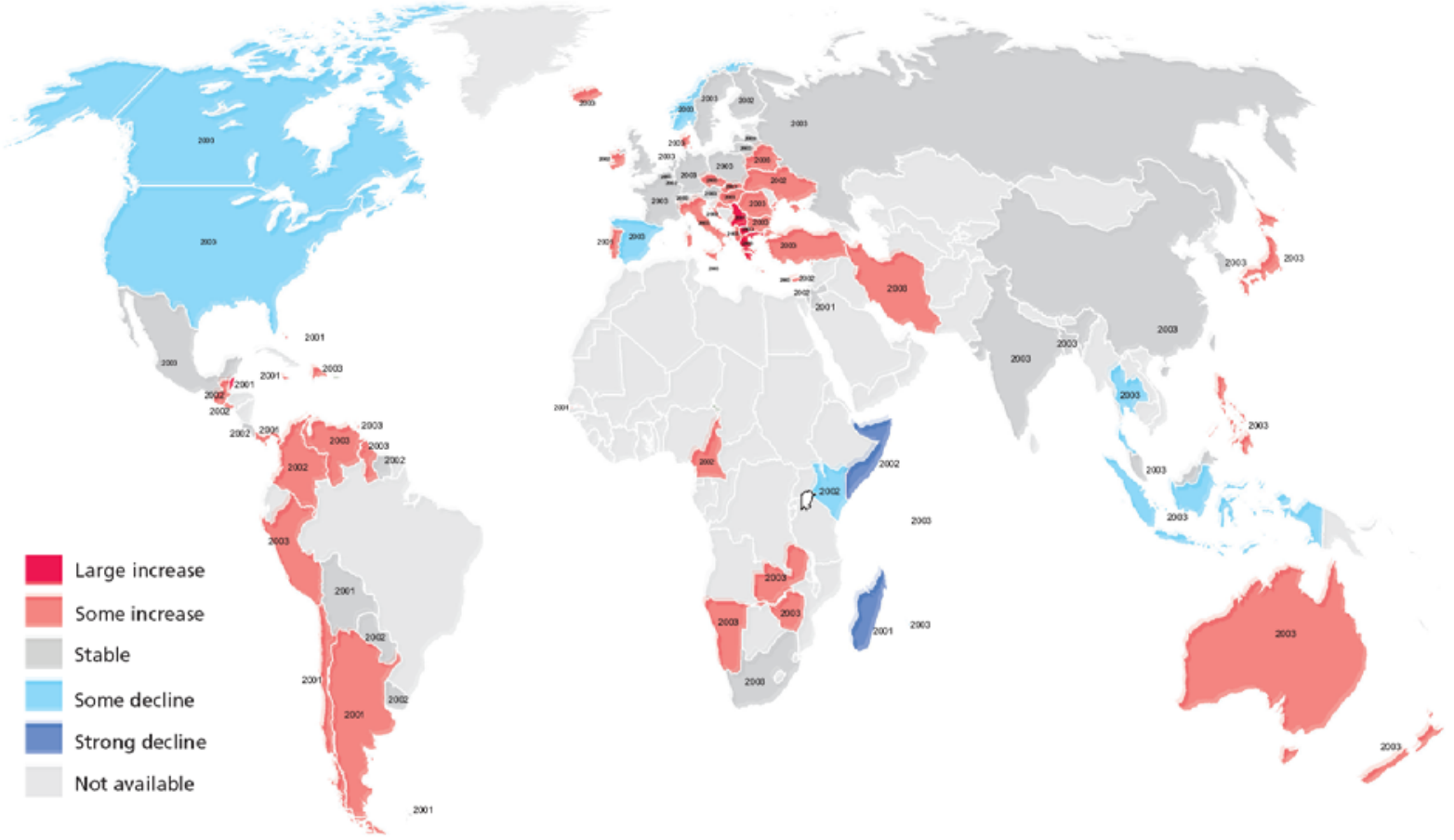


Map 24: Changes in abuse of amphetamine-type stimulants (excluding ecstasy), 2003 (or latest year available)



Sources: UNODC Annual Reports Questionnaires data, UNODC (Regional Centre Bangkok) Epidemiology Trends in Drug Trends in Asia (Findings of the Asian Multicity Epidemiology Workgroup, National Household Surveys submitted to UNODC, United States Department of State (Bureau for International Narcotics and Law Enforcement Affairs) International Narcotics Control Strategy Report;Bundeskriminalamt (BKA) and other Law Enforcement Reports.

Map 25: Changes in the use of ecstasy (MDA, MDEA, MDMA), 2003 (or latest year available)



Sources: UNODC Annual Reports Questionnaires data, UNODC (Regional Centre Bangkok) Epidemiology Trends in Drug Trends in Asia (Findings of the Asian Multicity Epidemiology Workgroup, National Household Surveys submitted to UNODC, United States Department of State (Bureau for International Narcotics and Law Enforcement Affairs) International Narcotics Control Strategy Report;Bundeskriminalamt (BKA) and other Law Enforcement Reports.

2. ESTIMATING THE VALUE OF ILLICIT DRUG MARKETS

2. Estimating the value of illicit drug markets

2.1 Background

The illicit drug industry operates outside the law. Its 'companies' are not listed on any stock exchange, they are not valued by any private accounting firm, and the dynamics of the drug industry are not regularly pored over by analysts, economists and forecasters. Yet the overall size of the illicit drug industry is known to be large and, therefore, a potential threat to a number of economies in terms of the financial power generated. The funds generated can be used to intimidate (including by means of violence) or corrupt government officials or, in some cases, political systems as a whole, as well as to crowd out licit economic activities, thus jeopardizing a country's future. If the illicit drug industry is to be successfully controlled, there is a need to come to an understanding of the likely amount of money involved and where these funds are being generated.

The utility of undertaking such an exercise is clear from both a policy and a trend analysis perspective. Knowledge of the market's value is indisputably useful for policy formulation. An informed estimate of the size of the drug markets also will enable analysts to look at the relative importance of the size of the markets *vis a vis* local economies and it will facilitate the comparison of the importance of different drugs in economic terms. In addition, knowledge of the size of these markets will give us an element for comparison with other illicit markets – an important issue when it comes to allocating scarce economic resources to fight various illegal activities.

The obscurity of the global illicit drug market makes the exercise of estimating its size difficult. This is not because the drug market does not behave like most others in terms of supply and demand - there is a growing acceptance that it does. It is rather because the most basic inputs that are needed for such an estimation – data on production, prices, quantities exported, imported and consumed – are themselves often estimates and are frequently based on deficient data.

A number of attempts to measure the size of the illicit drug industry have been made in the past, including by the Financial Action Task Force and the United Nations. The Financial Action Task Force (FATF) estimated that in the late 1980s, sales of cocaine, heroin and cannabis amounted to approximately US$124 billion per year in the United States and Europe[1], of this total some US$85 billion or 70% was considered to have been available for money laundering and investment.[2] Taking inflation into account, the FATF estimate of the size of the illicit drug industry for the late 1980s would be equivalent today to some US$200 billion (expressed in 2005 US dollars).[3]

Other United Nations estimates, based on cash flows from international banking and capital account statistics, suggested that up to US$300 billion per year could have been available for money laundering in the late 1980s.[4]

1 The FATF estimated the retail drug sales turnover during the 1980s at $108 billion in the United States and $16.3 billion in Europe, i.e. a total of $124.3 billion. The largest amount was estimated for cannabis ($74.7 billion), followed by cocaine ($28.8 billion), and heroin ($12 billion). Organisation for Economic Co-operation and Development, *FATF Working Group on Statistical and Methods, Narcotics Money Laundering - Assessment of Scale of the Problem*, 1989, *Financial Action Task Force on Money Laundering*, report, February 7, 1990.

2 Organisation for Economic Co-operation and Development, Financial Action Task Force on Money Laundering, Paris 1990, p. 6, quoted in UNDCP, Economic and Social Consequences of Drug Abuse and Illicit Trafficking, Vienna 1997, p. 27.

3 The $124 billion referred to estimates for 1988; based on the US Consumer Price Index, this amount would be equivalent to $201 billion in 2005 (http://data.bls.gov/cgi-bin/cpicalc.pl).

4 This figure was, however, qualified as "suspect" (probably too high) by the Intergovernmental Expert Group to Study the Economic and Social consequences of Illicit Traffic in Drugs (see E/CN.7/1991/25, p. 25).

Based on 1995 drug production estimates, UNDCP arrived at a global estimate of $360 billion, with a range from $85 billion to $1,000 billion.[5] Given this broad range and the high degree of uncertainty about the validity of some of the assumptions made, UNDCP's 1997 World Drug Report estimated a likely turnover of the illicit drug industry at around $400 billion.[6] This figure was questioned by some experts in the field as possibly too high. However, no alternative calculations on the likely size of the global drug industry were provided.

Another attempt as part of a broader exercise to estimate the total value of money laundered annually (from criminal activities) was started by the Financial Action Task Force in the late 1990s. It was decided to begin this exercise by looking into the illicit drug market, given the fact that it was better studied than most other illegal markets. A number of expert meetings were convened, bringing together expertise from various international, regional and national organisations. Given the extreme data limitations, existing weaknesses and contradictions of some of the data, the experts could not agree on the most appropriate methodological approach. The basic question was whether a top-down approach (starting from global production estimates) or a bottom-up approach (starting from country estimates based on prevalence rate and estimates of expenditure per drug user which would then have to be aggregated) offered a better chance to arrive at a realistic estimate of the total value of the drug market. Recommendations were made to encourage countries to improve their drug data collection systems and to encourage them to undertake drug market estimates at the national level.[7] Thus far only a limited number of country estimates on the value of the illicit drug market are currently available. These alone would be insufficient for generating global estimates.

Using the valuable lessons learned from these past exercises UNODC has continued work in this area. The organisation's objective is to have a reliable idea of the size of the value of the market, and to stimulate further research.

Three principles guided the production of these estimates: first only readily available data were used; second, the methodology and the model were kept straightforward and the assumptions transparent; and third, it was ensured that by distilling the market down to its most basic economic rules, the model would be easily updateable. In addition, the methodology chosen tries to combine, as far as possible, the top-down with the bottom-up approach. While UNODC is fully aware that the results will never have the same level of accuracy as could be expected from a comparable analysis of a licit market, and must be thus treated with caution, the new valuation methodology provides the best possible results, based on existing knowledge and data provided by Member States to UNODC. The methodology used and the results will be discussed in this Chapter.

2.1.1. The model

A global input-output model was developed building on existing UNODC data collection systems, thus making it replicable as well as allowing for expert opinion to be taken into account. The model used data published in last year's World Drug Report (2002/2003 data), supplemented –where data was missing - with data obtained from Member States over the last year. The model was used for the analysis of the main drug markets: opiates, cocaine, cannabis herb, cannabis resin, amphetamines and ecstasy.

Models work on assumptions, but these are made explicit so that they can be improved over time. The main assumption of this model is that what is being produced, less seizures and less losses, is available for consumption and is consumed. The amounts available for consumption in each sub-region are multiplied with the average purity adjusted prices of the respective sub-regions to arrive at the sub-regional market values. These values are then added up to arrive at the total market value. The model looks at the market sub-regionally. Data inconsistencies are detected in large part because the model looks at the market both from the supply side and the demand side.

5 This estimate amounted to US$117 billion for cocaine, US$107 billion for opiates, US$62 billion for cannabis herb, US$13 billion for cannabis resin and US$60 billion for synthetic drugs. UNDCP, *Economic and Social Consequences of Drug Abuse and Illicit Trafficking*, UNDCP Technical Series, p. 51.

6 United Nations International Drug Control Programme, *World Drug Report*, (Oxford University Press 1997), p.124.

7 Financial Action Task Force, *Report of the FATF Ad Hoc Group on Estimating the Magnitude of Money Laundering on Assessing Alternative Methodologies for Estimating Revenues from Illicit Drugs*, FATF-XI/PLEN/45 (2000).

The model starts with global drug production per sub-region and allocates it, less local consumption and purity adjusted seizures made in the source countries, either according to seizures made in the different sub-regions (for potential 'supply constrained regions')[8] or according to the 'number of drug users multiplied by per capita drug consumption ratios' (for potential 'demand constrained regions').[9] The model thus allows for different per capita consumption rates for different sub-regions.[10] From the allocated amounts per sub-region, the model deducts purity adjusted seizures and losses (set at 10%) and then multiplies the remaining amounts that are available for consumption in each sub-region with the purity adjusted prices. It uses the purity adjusted wholesale prices to estimate the wholesale value and the purity adjusted retail prices to calculate the final retail value. Adding up these sub-regional values gives the estimates at the global level.

The drug prices and drug purities of each country are weighted by the number of drug users in that country in order to calculate the regional average. The 'typical' drug prices and drug purities, provided by Member States were used. If no such typical prices or purity data were provided, the mid-point estimates of minimum and maximum values were used instead. If for any individual country no price or purity data is available, the model uses the unweighted sub-regional averages as a proxy.

The model allows for a number of calibrations, based on expert knowledge, to adjust, as far as possible, the model's assumptions to reality. Thus, it is possible to adjust for the likely effectiveness of law enforcement bodies in different regions. This affects the calculated interception rates and thus the allocation of the drugs to the various regions. For instance, enforcement effectiveness can be assumed to be higher in North America than in Africa, thus lower drug seizures in Africa can still go hand in hand with substantial levels of drug consumption. The model also has a built-in distribution mechanism that assumes that drugs produced in a region are, first of all, used to supply local demand before being exported. The subsequent distribution of drugs to the destination markets is then a function of geographical proximity (i.e. the closer any specific drug producing region is to another region, the higher the likely proportion of total exports going to such a region). Again, these model assumptions can be altered based on expert knowledge. For instance, special ethnic links and established drug trafficking routes are known to play, in some cases, a far more important role than mere geographic

Table 1. Drug related data routinely collected by UNODC

Production	Trafficking	Consumption
Cultivation	Drug seizures	Annual prevalence
Yields	Origin of drugs	Trends in drug consumption
Manufacture	Transit of drugs	
Laboratory seizures	Destination of drugs	
Prices	Prices	
Purities	Purities	Largely missing: Information on quantities of drugs consumed

8 The main hypothesis for this approach has been that seizures are positively correlated with the size of a drug market. In addition, seizures are, of course, also a function of the effectiveness of law enforcement bodies. This is taken into account by 'rating' the effectiveness of law enforcement of some regions versus others. In regions with a weak enforcement infrastructure even small seizures may indicate a sizeable drug market while the opposite can be true in regions with highly effective law enforcement bodies.

9 As a default value, the model assumes that all regions are 'supply constrained', i.e. people would use as much of a drug as they could secure. For drug producing and main transit countries, such an assumption is however, not very realistic. Such regions are subsequently set to become 'demand constrained'. This requires an assumption of the likely per drug capita consumption. If no additional information was available, it was usually assumed that average consumption of such regions would be close to the global average, estimated as amounts of drugs available (derived from production estimates less seizures and less losses), divided by the total number of drug users. In order to make the results of the two approaches ('supply constrained' and 'demand constrained') comparable, purity adjusted seizures are then added to arrive at the allocated amounts.

10 This is important because, information on per capita consumption rates is still very limited. It is hoped that this will improve over the next few years, which should strengthen the 'bottom-up' approach in the model.

proximity. For some specific cases, theoretical trafficking links could be completely ruled out (such as exports of North American cannabis herb to Africa or South Asia; differences in price levels would mean that traffickers involved in such operations would simply lose money).

One advantage of such a systematic approach with built-in cross-checks is to make explicit to the analyst all potential data inconsistencies. This systematic analysis of existing data is particularly important given well-known data weaknesses. It enables the identification of data that needs to be re-checked and/or indicates new areas of research. Moreover, the model helps to incorporate new estimates, research findings and intelligence whenever they should become available.

Key to the outcome of the model are, of course, the inputs used. The main inputs into the model are drug production estimates, seizures, drug price data (farm-gate, wholesale and retail prices), drug purity data (wholesale and retail level), estimated number of drug users and estimates of per capita drug consumption. Most of these data are routinely collected by UNODC.

Seizure, price and purity data are collected annually from countries through UNODC's Annual Reports Questionnaires and are supplemented by information collected from other international or regional bodies (such as INCB, Interpol, WCO, Europol, OAS etc.). Seizure data is thus the most complete data set. In addition, countries report typical drug trafficking patterns to UNODC, including the most typical trafficking routes. This information entered the model in the form of ex-post calibrations.

Prevalence data is basically collected through UNODC's Annual Reports Questionnaires. However, this data set is not as complete as seizure data as many governments still do not have appropriate monitoring systems in place. Thus, UNODC developed over the years a special methodology to estimate annual prevalence data from partially available data sets (e.g. extrapolating annual prevalence data from life-time prevalence data, from student surveys or from treatment data using annual prevalence data from other countries in the region as benchmark figures).

Largely missing – and not part of any routine data collection – is information on the per capita consumption of drugs by drug users. The lack of this information has been one of the biggest constraints to market analysis on the demand side and thus a main stumbling block to almost every attempt to gain greater insight into the market from the consumption side. There is almost no systematic and comparable data on the quantities of individual substances consumed per users in different regions. The information which does exist is limited and often contradictory. More research efforts in this area are clearly needed.

UNODC's strongest data sets are is for the cultivation of coca and opium poppy. Through its International Crop Monitoring Programme, UNODC, in cooperation with the respective national governments, uses ground and satellite based survey methods to measure the extent of cultivation (for coca, opium poppy and cannabis resin[11]). In combination with yield surveys, drug production estimates can thus confidently be established.

Production estimates on cannabis herb have been taken from replies to UNODC's Annual Reports Questionnaire as well as from other Government reports. The problem here is that most of these estimates are not based on rigorous scientific studies. In addition, for many countries the information is missing altogether. A number of countries in Africa, Asia and Europe, for instance, have been frequently identified by other countries as important source countries, but they did not provide any cannabis production estimates to UNODC. In such cases, it was assumed that the countries cover their local demand and use a certain percentage for export purposes. The total cannabis herb production estimate thus increased from otherwise 35,000 mt to 42,000 mt for the year 2003. However, a similar amount (5,000 mt) was subsequently deducted again as 'extraordinary losses' from one sub-region (North America) as available production estimates in this sub-region, reported to UNODC by various national authorities, seemed to exceed realistic consumption estimates.[12]

In the case of ATS indirect estimation methods were used, as described in other parts of this report, based on ATS consumption, ATS seizures and ATS precursor seizures.

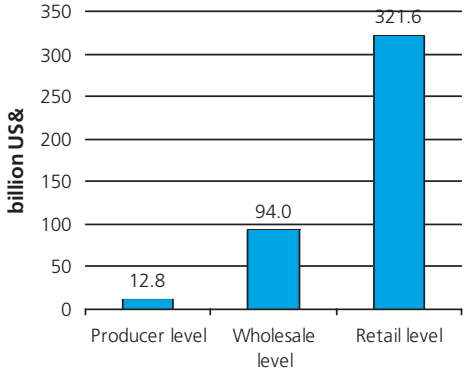
11 For Morocco.

12 This had to be done as a possible alternative explanation - exports - does not apply in this case; no information is available to UNODC that cannabis herb produced in North America is being exported to any other region in significant quantities.

2.2 Results

Based on the inputs and the calculations explained above, the value of the global illicit drug market for the year 2003 was estimated at US$13 bn at the production level, at $94 bn at the wholesale level (taking seizures into account), and at US$322bn based on retail prices and taking seizures and other losses into account. This indicates that despite seizures and losses, the value of the drugs increase substantially as they move from producer to consumer.

Fig. 1: Size of the global illicit drug market in 2003

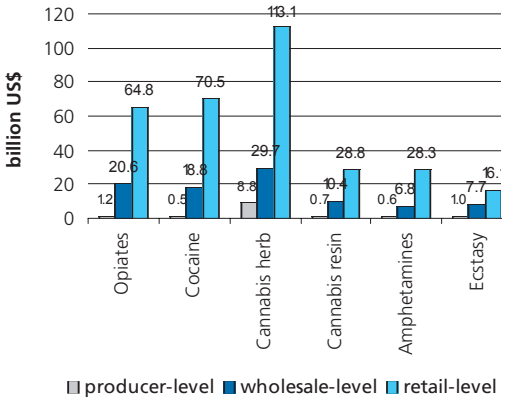


Source: Illicit Drug Market Estimation Model, based on UNODC, Annual Reports Questionnaire Data, Govt. reports and UNODC production and consumption estimates.

The largest market, according to these estimates, is cannabis herb (with a retail market size of $113 bn), followed by cocaine (US$71 bn), the opiates (US$65bn) and cannabis resin (US$29 bn). The ATS markets together (methamphetamine, amphetamine and ecstasy) amount to US$44 bn. The valuation does not take into account the value of other drugs.

While UNODC is reasonably confident with its estimations on opiates, cocaine and the ATS, the degree of certainty is far lower for cannabis, notably for cannabis herb, as information for production and consumption

Fig. 2: Size of the global illicit drug market in 2003 by substances



Source: Illicit Drug Market Estimation Model, based on UNODC, Annual Reports Questionnaire Data, Govt. reports and UNODC production and consumption estimates.

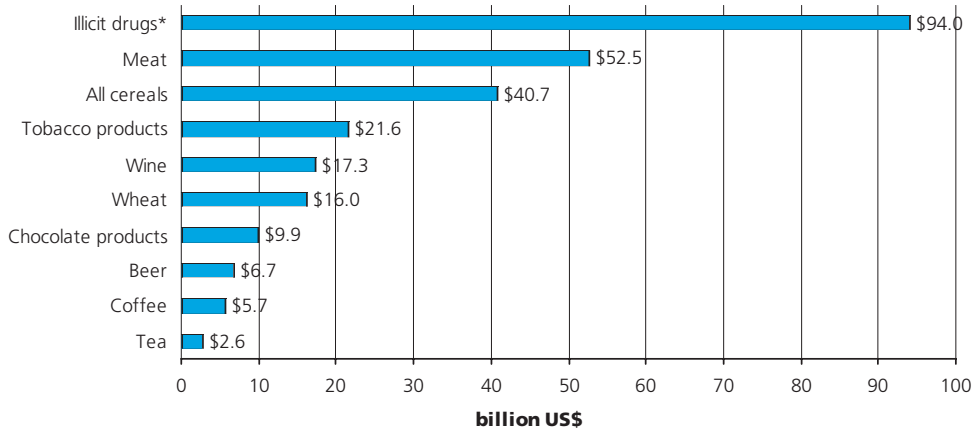
of this substance is highly contradictory. If better information becomes available, a major revision cannot be ruled out.

If compared to global licit exports (US$7,503 bn in 2003)[13] or compared to global GDP (US$35,765 bn in 2003)[14] the estimated size the global illicit drug market may not appear to be particularly high (0.9% of global GDP at retail level or 1.3% of global exports measures at wholesale level).[15]

Nonetheless, the size of the global illicit drug market is substantial. The value, measured at retail prices, is higher than the GDP of 88% of the countries in the world (163 out of 184 for which the World Bank has GDP data) and equivalent to about three quarters of Sub-Saharan Africa's combined GDP (US$439 bn in 2003). The sale of drugs, measured at wholesale prices, was equivalent to 12% of global export of chemicals (US$794 bn), 14% of global agricultural exports (US$674 bn) and exceeded global exports of ores and other minerals (US$79 bn) in 2003. Such sales of drugs were also higher than the combined total licit agricultural exports from Latin America (US$75 bn) and the Middle East (US$10 bn) in 2003.[16]

13 World Trade Organisation, *International Trade Statistics 2004*, p. 19.
14 World Bank, *World Development Indicators 2005 Report*, http://www.worldbank.org/data/wdi2005/.
15 The comparison with wholesale prices is more appropriate as export prices are usually closer to wholesale than to retail prices.
16 World Bank, World Development Indicators database, April 2005.

Fig. 3. Value of illicit drugs at wholesale level (in billion US$) compared to the export values of selected agricultural commodities in 2003



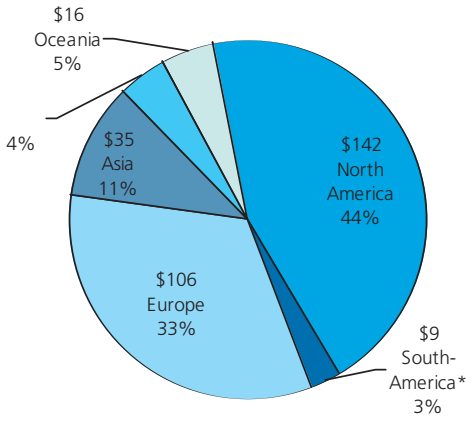
* illicit drugs measured at the wholesale level, used as a proxy for the export price

Sources: UNODC, Illicit Drug Market Estimation Model, FAO, FAOSTAT and ICO, *Annual Review 2003/04*.

The relative importance of the size of illicit drugs market becomes more pronounced if compared to the exports of individual products. Exports of wine (US$17.4 bn) and beer (US$6.7 bn) are equivalent to just a quarter of the wholesale value of illicit drugs.[17] Coffee, one of the world's most ubiquitous beverages, used to generate some US$15bn in export revenue in the 1990s,[18] falling to less than US$6 bn in 2003.[19] Global exports of tobacco products (including cigarettes) are equivalent to about a fifth of the global wholesale value of illicit drugs. Wheat, a staple of a large portion of the global population, generated US$16bn in export revenue in 2003. All cereal exports together resulted in export revenue of $41 bn,[20] less than half the wholesale value of the global illicit drugs market.

In terms of the regional distribution, the world's largest drug market – in economic terms – was identified to be North America,[21] accounting for 44% of the world's total drug sales at the retail level, followed by Europe (33%). Within Europe, West and Central Europe[22] is the dominant drug market (27% of total). The next largest retail drug markets are Asia (11%) followed by Oceania (5%) and Africa (4%).

Fig. 4: Regional breakdown of the global illicit drug market in billion US $ (N = $322 bn)

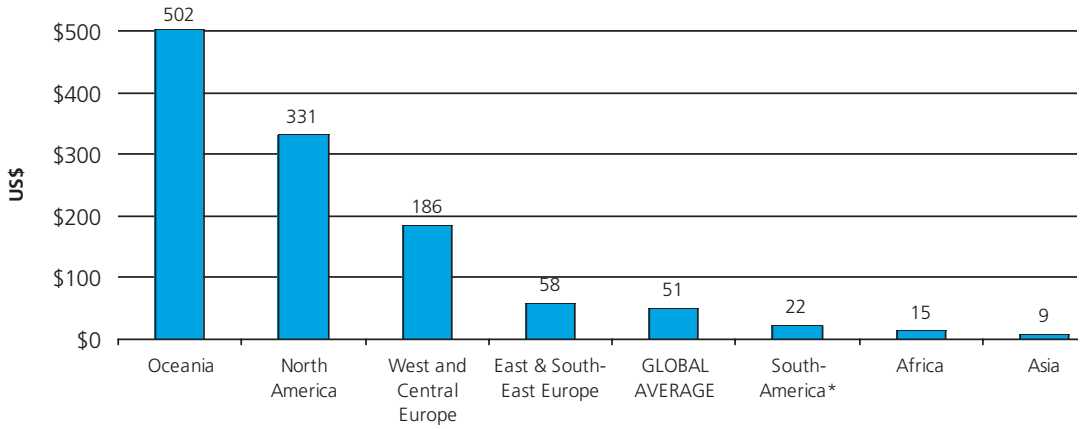


* Including Caribbean and Central America.

Sources: UNODC, Illicit Drug Market Estimation Model.

17 Food and Agriculture Organization of the United Nations, FAOSTAT, http://faostat.fao.org/faostat/collections?version=ext&hasbulk=0.
18 Aksoy, M.A. and Beghin, J.C. eds., Global Agriculture and Trade in Developing Countries, World Bank, Washington DC, 2005, p 297 (evaluated at 1997-98 average prices and volumes.)
19 International Coffee Organization, *Annual Review 2003/04*, p. 6.
20 Food and Agriculture Organization of the United Nations, FAOSTAT, http://faostat.fao.org/faostat/collections?version=ext&hasbulk=0
21 North America is defined to include: Canada, Mexico and the United States of America.
22 West & Central Europe includes the 25 EU countries, the EFTA countries and small countries such as Monaco, Andorra and San Marino.

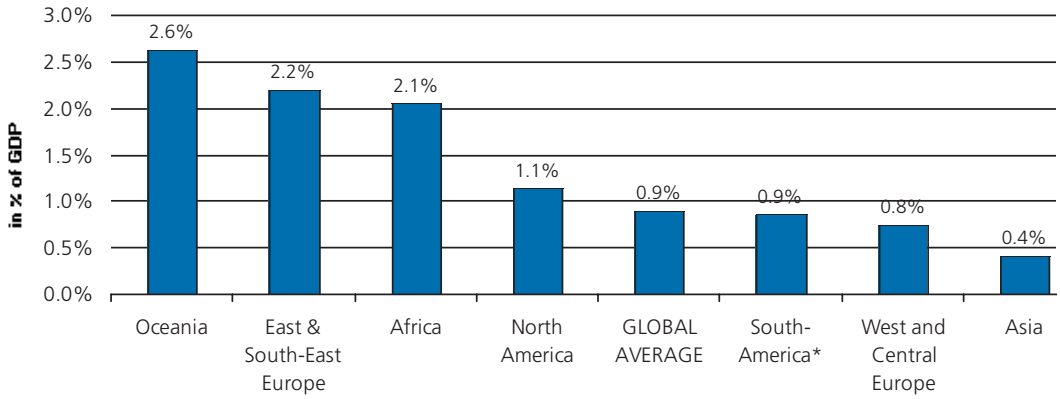
Fig. 5: Per capita expenditure on drugs (in current US$)



* Including Caribbean and Central America.

Sources: UNODC, Illicit Drug Market Estimation Model, United Nations, Population Division, Department of Economic and Social Affairs, *World Population Prospects: The 2002 Revision (POP/DB/WPP/Rev.2002/4/F1).*

Fig. 6: Expenditure on drugs in % of GDP (2003)



* Including Caribbean and Central America.

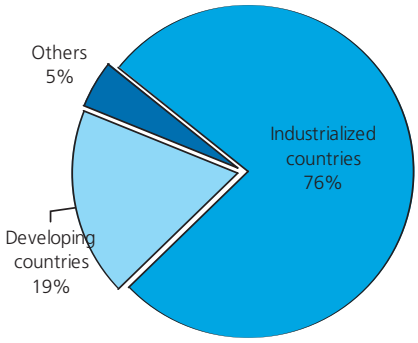
Sources: UNODC, Illicit Drug Market Estimation Model, World Bank,*World Development Indicators 2005*.

On a per capita basis, the results of the model suggest that the highest expenditures on drugs per year (expressed in current US-dollars) are found in the Oceania region, followed by North America and West and Central Europe. Below average expenditures on drugs are seen in Asia, Africa and South America. This is mainly the result of far lower drug prices in these countries. Global expenditures on drugs amount to about US$50 per person per year.

Expressed as a percentage of GDP, drug sales (at the retail level) seem to be most important in the Oceania region, followed by East and South-East Europe[23] and Africa. The lowest importance of retail sales of drugs as compared to the size of the overall economy is in Asia. Though only about a third of the world's drug users are located in OECD countries, about three quarters of the world's retail drug market – in economic terms - is found in the industrialized world (some US$245 bil-

23 East Europe is defined to include the European countries of the C.I.S. (Russian Federation, Ukraine, Belarus, Rep. Of Moldavia); South-East Europe is defined to include Turkey and the (non EU-25) Balkan countries.

Fig. 7: Distribution of the ' value added' of the illicit drug industry (N = $322 bn)



Sources: UNODC, Illicit Drug Market Estimation Model, World Bank.

lion).

The calculations also show that, in absolute terms, the highest profits are made between the wholesale and the retail level. Given the concentration of the retail markets in the industrialized countries, the results suggest that most of the 'value-added' (gross profits) of the illicit drug industry actually takes place in the industrialized world. Of the total 'value-added' of the illicit drug industry, 76% is generated in the industrialized countries, 19% in developing countries and the rest in transition countries. Total producer income is, on average, 4% of the final retail value. For heroin and cocaine, it is close to 1% of the final retail value.

2.3 Results of the individual markets

2.3.1 The cocaine trade - valued at over US$70 bn per year (retail level)

Table 2 presents an analysis of levels of production in source countries and distribution to consumer countries. For a variety of reasons, it was necessary to base the cocaine production estimates on a three-year average (2001-2003), resulting in a figure of 761 mt This amount, however, does not reach the consumers. After deducting seizures in the source countries (Colombia, Peru, Bolivia), the amount available for shipment to consumers was 653 mt Based on these data and average cocaine base prices of US$808 per kilogram, the local income from cocaine base production in South America was estimated at US$527 million.

In order to determine the destination of this production, the number of consumers in each region was first considered. In addition, the cycle of the epidemic plays an important role. Countries or regions in an early stage of a drug epidemic can be expected to have many recreational users but only a limited number of hard-core addicts, while the opposite is true in more advanced situations. Based on a limited number of studies on the per capita consumption patterns of drug users, it was estimated that the average cocaine user in North America consumes 44 grams of pure cocaine per year while the average cocaine user in Western and Central Europe and in South America consumes some 35 grams per year.

Taking the information on the estimated number of cocaine users and the estimated number of per capita consumption rates into account, the model calculates the amount of drugs consumed in these sub-regions. Factoring in the purity adjusted seizures made in these sub-regions, the model arrives at the likely amounts of cocaine being imported. Based on these calculations, it would appear that the bulk of the cocaine produced in the Andean region goes to North America (352 mt), with lesser amounts being received in West and Central Europe (134 mt), the Caribbean (17 mt) and Central America (16 mt). About 101 mtare retained in South America for domestic consumption. Between them, these regions account for the bulk of the cocaine trafficked (96%). Deducting purity adjusted seizures and losses (set at 10%), the model calculates the amounts actually available for consumption[24] in North America (280 mt of pure cocaine), West and Central Europe (107 mt), and South America (69 mt). For other regions, see Table 2.

Multiplying these amounts with the purity adjusted average cocaine prices (i.e. prices calculated for 100% pure cocaine) gives a wholesale value for the region. Adding up the wholesale-values from all regions gives a total market value of US$18.8 bn, including the large

24 The model does not differentiate between seizures made at the wholesale level and those made at the retail level. The implicit assumption here is that most of the seizures and losses take place in the shipment of cocaine from the Andean region to the destination countries; seizures at a later stage, i.e. at the retail distribution level, are considered to be rather small. Such seizures are already included in the overall seizures figures at the wholesale level.

Table 2. Cocaine: Production and distribution from source countries to destination countries

Producer Regions	Total Production in Source Country (Kg Cocaine Equiv)	Total Seized/Lost in Source Country (Kg Cocaine Equiv)	Total Available for Sale (Kg Cocaine Equiv)	Transferred to Markets (Kg Cocaine Equiv)	Total Seized/ lost in Transit (Kg Cocaine Equiv)	Consumer Regions																All Countries
						East Africa	North Africa	South Africa	West & Central Africa	Caribbean	Central America	North America	South America	Central Asia & Transcaucasus	East & SouthEast Asia	Near & Middle East /SW Asia	South Asia	East Europe	West & Central Europe	SouthEast Europe	Oceania	
East Africa	0	0	0	830	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
North Africa	0	0	0	1,194	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Southern Africa	0	0	0	5,456	298	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
West and Central Africa	0	0	0	7,054	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Caribbean	0	0	0	17,110	11,350	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Central America	0	0	0	15,599	8,880	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
North America	0	0	0	352,766	72,776	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
South America	761,000	108,381	652,619	100,630	31,796	830	1,194	5,456	7,054	17,110	15,599	352,766	100,630	4	2,999	1,403	755	3,190	133,806	2,373	7,451	**652,619**
Central Asia & Transcaucasus	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
East and South-East Asia	0	0	0	2,999	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Near & Middle East /SW Asia	0	0	0	1,403	102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
South Asia	0	0	0	755	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Eastern Europe	0	0	0	3,190	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Western & Central Europe	0	0	0	133,806	26,444	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
South East Europe	0	0	0	2,373	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Oceania	0	0	0	7,451	58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
All Countries	761,000	108,381	652,619	652,619	151,898	830	1,194	5,456	7,054	17,110	15,599	352,766	100,630	4	2,999	1,403	755	3,190	133,806	2,373	7,451	**652,619**

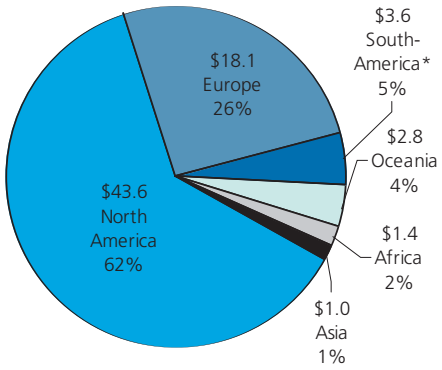
Table 3. Cocaine: Supply and demand in destination countries

	Regions																All Countries
	East Africa	North Africa	South Africa	West & Central Africa	Caribbean	Central America	North America	South America	Central Asia & Transcaucasus	East & SouthEast Asia	Near & Middle East /SW Asia	South Asia	East Europe	West & Central Europe	SouthEast Europe	Oceania	
Production:																	
Total Production in Source Country (Kg Cocaine Equiv)	0	0	0	0	0	0	0	761,000	0	0	0	0	0	0	0	0	761,000
Total Seized/Lost in Source Country (Kg Cocaine Equiv)	0	0	0	0	0	0	0	108,381	0	0	0	0	0	0	0	0	108,381
Total Available for Sale (Kg Cocaine Equiv)	0	0	0	0	0	0	0	652,619	0	0	0	0	0	0	0	0	652,619
Farmgate Price at Origin (US$/Kg Cocaine Equiv)								808									808
Producer Income (US$mill)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**527**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**527**
Supply:																	
Total Intended for Consumption (Kg Cocaine Equiv)	830	1,194	5,456	7,054	17,110	15,599	352,766	100,630	4	2,999	1,403	755	3,190	133,806	2,373	7,451	652,619
Total Seized/Lost at Destination (Kg Cocaine Equiv)	9	13	298	26	11,350	8,880	72,776	31,796	0	44	102	11	47	26,444	43	58	151,898
Total Available for Consumption (Kg Cocaine Equiv)	820	1,181	5,158	7,028	5,760	6,719	279,990	68,834	4	2,955	1,301	744	3,144	107,361	2,329	7,393	500,721
Wholesale price at Destination US$ /gm	133	150	25	33	11	13	32	4	60	43	65	70	101	64	92	140	38
Wholesaler Income (US$mill)	**109**	**177**	**128**	**229**	**64**	**88**	**9,089**	**247**	**0**	**128**	**85**	**52**	**319**	**6,831**	**214**	**1,037**	**18,797**
Demand:																	
Estimated User Population (Thousands)	65	66	265	540	164	191	6,382	1,961	5	94	30	26	108	3,059	172	211	13,339
Estimated Actual Consumption per year (Kg Cocaine Equiv)	738	1,063	4,642	6,325	5,760	6,719	279,990	68,834	4	2,660	1,170	669	2,829	107,361	2,096	7,393	498,255
Implied Consumption per user (gms Cocaine Equiv)	11	16	18	12	35	35	44	35	1	28	39	26	26	35	12	35	37
Average Retail Price US$ /gm	348	520	47	60	49	20	156	46	183	253	121	227	124	161	208	380	141
Retailer Income (US$mill)	**257**	**553**	**220**	**378**	**281**	**132**	**43,570**	**3,172**	**1**	**673**	**141**	**152**	**351**	**17,328**	**437**	**2,809**	**70,455**

markets of North America (US$ 9.1 bn), West and Central Europe (US$6.8 bn), and South America (US$0.3 bn). The South American figure reflects, however, only the gross income of wholesalers supplying the domestic market. The total wholesale income in South America, where much of the cocaine is not destined for local consumption but for exports, is much larger. The total gross income of wholesalers in South America would be equivalent to about US$2.6 bn.

Retail values were calculated by multiplying the amounts available for consumption by the purity adjusted retail prices, resulting in remarkably high figures in North America (US$44 bn), West and Central Europe (US$17 bn), and South America (US$3 bn). The global retail market for cocaine adds up to US$70.5 bn. The results of the model suggest that North America (62%), followed by Europe (26%) are, in economic terms, the largest cocaine markets.

Fig. 8: Regional distribution of cocaine retail sales in 2003 in billion US$ (N = US$70.5 bn)



* including Caribbean and Central America
Sources: UNODC, Illicit Drug Market Estimation Model.

2.3.2 The opiates trade - valued at US$65 bn per year(retail level)

Global production of opiates is estimated at 476.5 mt (in heroin equivalents) in 2003, most of which is produced in the Near and Middle East/South-West Asia sub-region (365 mt), which includes Afghanistan. In contrast to cocaine, however, opiate production takes place in more than one region. The second most important production region is East and South-East Asia (94 mt), mainly Myanmar and Laos. Other production areas of importance are in North America (reflecting production in Mexico) and in South America (mainly reflecting production in Colombia).

For each of these production areas, distinct distribution patterns can be identified. Most of the opiates produced in the Near and Middle East/South-West Asia sub-region are either consumed locally (more than a fifth) or exported to Europe (about half). The rest goes to other regions. In the case of East and South-East Asia, two thirds are for consumption within the region. All of the opiates produced in North America remain within this region (mainly destined for the US market) and opiates produced in South America are for the local market and for the market in North America.

According to the results of the model, close to 100 mt of heroin are destined for the markets of West and Central Europe, about 90 mt for East Europe and 10 mt for South-East Europe. Deducting seizures and losses (assumed to amount to 10%), 84 mt are actually available for consumption in West and Central Europe, equivalent to 58 grams per heroin user per year. This is higher than the average at the global level (28 grams). However, one internal study, commissioned by UNODC, found that average heroin consumption among heroin users in the three months prior to undergoing drug treatment was close to 68 grams of pure heroin per year.[25] According to reports from the Swiss heroin maintenance program, which covers a group of hard-core heroin addicts, 135 grams per addict are consumed annually.[26] Against this background, a per capita consumption of 58 grams of heroin per year in West and Central Europe appears to be feasible.

25 These results were based on the results of a UK study on people entering treatment in 1997 (Gossop et al., "National Treatment Outcome Research Study in the United Kingdom", *Psychol. Addictive Behaviours, 1997*). The study showed an average consumption of 0.6 grams per day, and a consumption of, on average, 22 days per month. Average consumption per month was thus 14.9 grams of heroin (at street purity), which amounts to 179 grams per year. Applying the average purity of around 38 % reported by forensic laboratories in the UK in 1997 (The Forensic Science Service, "Drug Abuse Trends", various issues), average annual consumption would be 68 grams of pure heroin per problem drug user.

26 Institut für Suchtforschung, Universität Zürich, Institut für Sozial und Präventivmedizin, *Versuche für eine ärztliche Verschreibung von Betäubungsmitteln, Synthesebericht,* (Ambros Uchtenhagen), June 1997.

Table 4. Opiates: Production and distribution from source countries to destination countries

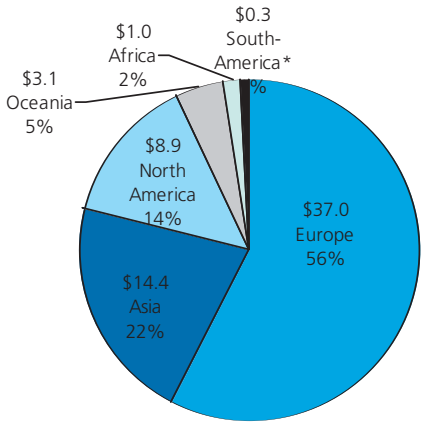
Producer Regions	Total Production in Source Country (Kg Heroin Equiv)	Total Seized/Lost in Source Country (Kg Heroin Equiv)	Total Available for Sale (Kg Heroin Equiv)	Transferred to Markets (Kg Heroin Equiv)	Total Seized/ lost in Transit (Kg Heroin Equiv)	Consumer Regions																All Countries
						East Africa	North Africa	South Africa	West & Central Africa	Caribbean	Central America	North America	South America	Central Asia& Transcaucasus	East & SouthEast Asia	Near & Middle East /SW Asia	South Asia	East Europe	West & Central Europe	SouthEast Europe	Oceania	
East Africa	0	0	0	2,293	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
North Africa	714	0	714	3,410	35	0	714	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**714**
Southern Africa	0	0	0	1,099	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
West and Central Africa	0	0	0	9,954	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Caribbean	0	0	0	364	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Central America	0	0	0	783	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
North America	8,400	209	8,191	28,735	6,621	0	0	0	0	0	0	8,191	0	0	0	0	0	0	0	0	0	**8,191**
South America	5,268	440	4,829	3,255	399	0	0	0	0	0	0	1,574	3,255	0	0	0	0	0	0	0	0	**4,829**
C. Asia & Transcaucasus	770	0	770	12,076	2,748	0	0	0	0	0	0	0	0	770	0	0	0	0	0	0	0	**770**
East and South-East Asia	94,050	582	93,468	59,928	6,885	240	267	119	1,076	39	85	2,050	0	1,222	59,928	0	6,663	9,483	10,508	1,028	762	**93,468**
Nr & M.East /SW Asia	365,150	9,551	355,599	78,352	27,723	2,053	2,429	980	8,878	325	698	16,920	0	10,084	0	78,352	55,003	78,283	86,740	9,180	5,673	**355,599**
South Asia	0	0	0	61,666	252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Eastern Europe	2,147	0	2,147	89,913	923	0	0	0	0	0	0	0	0	0	0	0	0	2,147	0	0	0	**2,147**
Western & Central Europe	0	0	0	97,248	3,994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
South East Europe	0	0	0	10,208	4,713	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Oceania	0	0	0	6,436	198	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
All Countries	476,500	10,781	465,719	465,719	54,856	2,293	3,410	1,099	9,954	364	783	28,735	3,255	12,076	59,928	78,352	61,666	89,913	97,248	10,208	6,436	**465,719**

Table 5. Opiates: Supply and demand in destination countries

	Regions																All Countries
	East Africa	North Africa	South Africa	West & Central Africa	Caribbean	Central America	North America	South America	Central Asia& Transcaucasus	East & SouthEast Asia	Near & Middle East /SW Asia	South Asia	East Europe	West & Central Europe	SouthEast Europe	Oceania	
Production:																	
Total Production in Source Country (Kg Heroin Equiv)	0	714	0	0	0	0	8400	5268	770	94050	365150	0	2147	0	0	0	476500
Total Seized/Lost in Source Country (Kg Heroin Equiv)	0	0	0	0	0	0	209	440	0	582	9551	0	0	0	0	0	10781
Total Available for Sale (Kg Heroin Equiv)	0	714	0	0	0	0	8191	4829	770	93468	355599	0	2147	0	0	0	465719
Farmgate Price at Origin (US$/Kg Heroin Equiv)										1339	2830						2520
Producer Income (US$mill)	**0**	**2**	**0**	**0**	**0**	**0**	**21**	**12**	**2**	**125**	**1006**	**0**	**5**	**0**	**0**	**0**	**1173**
Supply:																	
Total Intended for Consumption (Kg Heroin Equiv)	2293	3410	1099	9954	364	783	28735	3255	12076	59928	78352	61666	89913	97248	10208	6436	465719
Total Seized/Lost at Destination (Kg Heroin Equiv)	47	35	7	51	80	180	6621	399	2748	6885	27723	252	923	3994	4713	198	54856
Total Available for Consumption (Kg Heroin Equiv)	2246	3375	1092	9903	285	603	22113	2856	9328	53042	50629	61413	88990	93254	5496	6237	410863
Wholesale price at Destination US$ /gm	28	42	28	15	38	73	98	25	21	38	7	71	36	73	26	140	50
Wholesaler Income (US$mill)	**63**	**142**	**30**	**153**	**11**	**44**	**2175**	**71**	**194**	**2022**	**379**	**4355**	**3198**	**6779**	**145**	**874**	**20635**
Demand:																	
Estimated User Population (Thousands)	84	108	85	524	21	24	1301	286	370	2105	2009	3102	2406	1450	180	99	14154.3
Estimated Actual Consumption per year (Kg Heroin Equiv)	2021	3038	983	8913	285	603	22113	2856	9328	53042	50629	61413	80091	83929	5496	5614	390353
Implied Consumption per user (gms Heroin Equiv)	24.2	28.0	11.5	17.0	13.5	25.2	17.0	10.0	25.2	25.2	25.2	19.8	33.3	57.9	30.6	56.5	27.6
Average Retail Price US$ /gm	40	124	81	57	41	83	402	101	51	108	12	123	133	302	183	561	166
Retailer Income (US$mill)	**82**	**377**	**80**	**508**	**12**	**50**	**8886**	**288**	**480**	**5725**	**596**	**7567**	**10681**	**25340**	**1006**	**3148**	**64825**

Multiplied with purity adjusted retail prices, weighted by the number of consumers in each country, the value of the opiate market in West and Central Europe is estimated at US$25 bn. This is in line with previous UNODC estimates on the size of West Europe's heroin market. The total retail market value of Europe's opiate market (including those of East and South-East Europe) is estimated at US$37 bn. Europe accounts thus for 56% of the global opiates retail market, valued at around US$65 bn. The next largest retail market – in economic terms – is Asia, accounting for 22% of the total. The third largest market is North America, which consumes US$9 bn worth of the drug or 14% of the total.[27]

Fig. 9: Regional distribution of opiate retail sales in 2003 in billion US$ (N = US$64.8 bn)



* including Caribbean and Central America
Sources: UNODC, Illicit Drug Market Estimation Model.

2.3.3. The cannabis trade, valued at over US$140 bn per year (retail level)

There are two distinctly different cannabis markets: herbal cannabis, valued at US$113 bn and cannabis resin, valued at US$28 bn.

A great deal of effort has gone into modelling the cannabis markets. Nonetheless, a word of caution is needed. The potential error between the estimations shown below and the 'true value' of the cannabis market could be significant, much higher than the potential errors that could be expected from the calculation of the heroin or the cocaine market. This is due to apparent data inconsistencies that make it difficult to reconcile supply-based estimates with demand-based estimates. Nonetheless, as far as possible, such an attempt was made, based on the assumption that the 'truth' is somewhere in the middle. The resulting estimates are the best that could be made, given the current level of information. This does not rule out the possibility that substantial changes could occur (notably for cannabis herb), once better, scientifically generated information becomes available.

Valuation of cannabis herb

Production estimates were taken from Member States' replies to UNODC's Annual Reports Questionnaires and official Government reports. Very strong year-to-year changes, particularly with regard to yields, suggest that these estimates were based on limited information and are not always reliable. One example of the data weakness in this area is the lack of credible production estimates for Africa. A number of African countries are frequently reported as important source countries for cannabis herb imported into Europe, but these countries do not provide production estimates to UNODC. Based strictly on available data, the model would predict that North America should be exporting cannabis to Africa, a trafficking route that does not, in fact, exist. The same applied to a significant number of countries from other regions as well.

Against this background, a systematic review was undertaken of all the countries that, over the last decade, had been reported by other countries as a source of cannabis or themselves reported the seizure of whole cannabis plants. The seizure of whole plants is indicative of domestic cultivation, because only a portion of the plant is used as a drug, and so whole plants are rarely trafficked across borders. For these countries, production was estimated to cover domestic demand, multiplying

27 Estimates for North America, however, highlighted a problem that still needs to be resolved in future. There are some apparent contradictions as to the origin of heroin and its reported availability. According to US Government reports, heroin produced in Colombia and Mexico account for the bulk of illegal heroin imports in the USA. However, current production estimates available for these countries are not sufficient to cover the bulk of the North American demand for heroin.

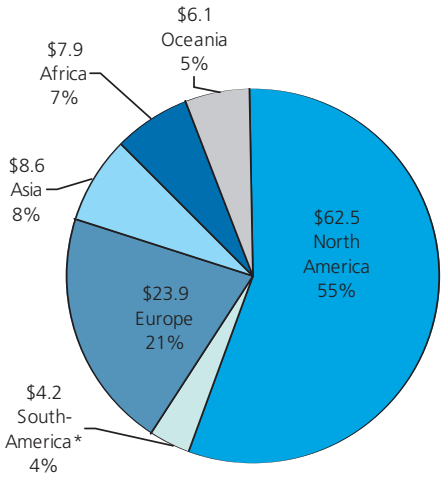
the number of estimated cannabis users by the average global cannabis herb consumption rate, derived from the initial calculations. For countries that were identified as cannabis producing countries but were not identified as major cannabis exporting countries, a certain percentage of domestic demand was used to estimate local production. The percentages chosen depended on quantitative and qualitative information available for different regions. For instance, based on estimates provided by the authorities of some European countries, local cannabis herb production from European countries, which (i) apparently had domestic production but (ii) had not provided a production estimate to UNODC, was set at 25% of calculated domestic demand. Clearly, this is not an ideal estimation technique but, in a number of cases, subsequent indications of likely orders of magnitude of cannabis production, referred in scientific literature, came rather close to these results.

Proceeding along these lines on a country-by-country basis, global cannabis production estimates increased from 35,000 mt to 42,000 mt Looking at the seizure figures, this would suggest an interdiction rate of around 14%, which is not unrealistic. After the model was run with these 'adjusted' production figures, the distribution pattern with regard to importing and exporting regions fell into line with what is known about actual trafficking patterns. The basic pattern reflected in this model is that, for most countries, local production is destined for domestic demand and only relatively small amounts are destined for export. The most important importer is West and Central Europe, while the largest market is North America.

One problem remained with regard to reconciling these production estimates with consumption figures: North America. Cannabis production estimates in North America exceed estimated consumption levels. This problem has been highlighted by US authorities elsewhere[28], but no solution has been found to overcome this data discrepancy. One potential explanation – that cannabis herb is being exported from North America – can be also ruled out, as cannabis prices are high in North America and exports to most markets would result in losses for the traffickers.

Both demand side estimates and supply side estimates seem to be based on scientific research, and this makes it difficult to simply ignore one or the other. Assuming that the truth is probably somewhere in the middle, UNODC tried to find a compromise solution. The approach was to choose the lowest available production estimates (14,370 mt for Mexico, the USA and Canada,[29] instead of production estimates of around 25,000 mt for the region[30]) and to subsequently deduct another 5,000 mt (about a third of the lower production estimates) as 'extraordinary losses'. After deducting seizures made in the region, this resulted in an estimate of 5.9 mt of cannabis herb available for consumption in North America, equivalent to a per capita consumption

Fig. 10: Regional distribution of cannabis herb retail sales in 2003 in billion US$ (N = US$113.1 bn)



* including Caribbean and Central America
Sources: UNODC, Illicit Drug Market Estimation Model.

28 Drug Availability Steering Committee, *Drug Availability Estimates in the United States, December 2002*, http://www.whitehousedrugpolicy.gov/publications/pdf/drugavailability.pdf; see also UNODC, *World Drug Report 2004*.

29 Estimate for cannabis herb production in North America: Mexico: 7,900 tons in 2002 (US. Dept. of State, *International Narcotics Control Strategy Report, 2004*), USA: 5,670 tons in 2003 (UNODC, ARQ), Canada: 800 tons in 2003 (UNODC, ARQ).

30 According to the National Drug Intelligence Center, National Drug Threat Assessment 2005, cannabis herb production increased in 2003 in Mexico to 13,500 tons; US cannabis production, according to ONDCP, may have amounted to more than 10,000 tons (ONDCP, National Drug Control Strategy 2003) and the upper estimate of production in Canada was reported at 2000 tons. (National Drug Intelligence Center, National Drug Threat Assessment 2005).

Table 6. Cannabis herb: Production and distribution from source countries to destination countries

Producer Regions	Total Production in Source Country (Kg Cannabis Equiv)	Total Seized/Lost in Source Country (Kg Cannabis Equiv)	Total Available for Sale (Kg Cannabis Equiv)	Transferred to Markets (Kg Cannabis Equiv)	Total Seized/ lost in Transit (Kg Cannabis Equiv)	Consumer Regions															All Countries
						East Africa	North Africa	South Africa	West & Central Africa	Caribbean	Central America	North America	South America	Central Asia & Transcaucasus	East & SouthEast Asia	Near & Middle East /SW Asia	South Asia	East Europe	West & Central Europe	SouthEast Europe	Oceania	
East Africa	632,513	0	632,513	1,261,816	774,031	632,513	0	0	0	0	0	0	0	0	0	0	0	0	0	0	632,513
North Africa	4,155,141	0	4,155,141	1,793,604	69,060	393,873	1,793,604	0	640,920	0	73,813	0	0	0	0	0	0	479,355	768,571	0	5,004	4,155,141
Southern Africa	2,969,520	0	2,969,520	1,811,648	62,779	193,118	0	1,811,648	314,246	0	36,191	0	0	0	0	0	0	235,030	376,834	0	2,454	2,969,520
West and Central Africa	4,152,362	0	4,152,362	5,176,379	562,161	0	0	0	4,152,362	0	0	0	0	0	0	0	0	0	0	0	0	4,152,362
Caribbean	558,881	0	558,881	473,486	133,443	0	0	0	0	473,486	7,438	0	0	0	0	0	0	0	77,452	0	504	558,881
Central America	173,351	0	173,351	331,427	7,657	0	0	0	0	0	173,351	0	0	0	0	0	0	0	0	0	0	173,351
North America	14,370,000	8,440,349	5,929,651	5,929,651	9,889	0	0	0	0	0	0	5,929,651	0	0	0	0	0	0	0	0	0	5,929,651
South America	3,209,502	0	3,209,502	2,153,740	482,186	0	0	0	0	0	40,633	0	2,153,740	0	0	0	325,401	263,881	423,092	0	2,755	3,209,502
Central Asia & Transcaucasus	2,250,981	0	2,250,981	624,050	26,431	0	0	0	0	0	0	0	0	624,050	555,337	0	343,501	278,559	446,626	0	2,908	2,250,981
East and South-East	1,767,688	0	1,767,688	2,425,686	46,699	0	0	0	0	0	0	0	0	0	1,767,688	0	0	0	0	0	0	1,767,688
Near & Middle East /SW Asia	1,938,236	0	1,938,236	1,526,315	88,153	42,312	0	0	68,851	0	0	0	0	0	102,661	1,526,315	63,500	51,495	82,564	0	538	1,938,236
South Asia	3,539,378	0	3,539,378	4,271,781	82,239	0	0	0	0	0	0	0	0	0	0	0	3,539,378	0	0	0	0	3,539,378
Eastern Europe	87,520	0	87,520	1,449,034	41,845	0	0	0	0	0	0	0	0	0	0	0	0	87,520	0	0	0	87,520
Western & Central Europe	966,307	0	966,307	3,226,732	66,368	0	0	0	0	0	0	0	0	0	0	0	0	0	966,307	0	0	966,307
South East Europe	540,476	0	540,476	401,439	46,513	0	0	0	0	0	0	0	0	0	0	0	0	53,194	85,288	401,439	555	540,476
Oceania	680,099	0	680,099	694,817	13,606	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	680,099	680,099
All Countries	41,991,953	8,440,349	33,551,605	33,551,605	2,513,060	1,261,816	1,793,604	1,811,648	5,176,379	473,486	331,427	5,929,651	2,153,740	624,050	2,425,686	1,526,315	4,271,781	1,449,034	3,226,732	401,439	694,817	33,551,605

Table 7. Cannabis herb: Supply and demand in destination countries

	Regions																All Countries
	East Africa	North Africa	South Africa	West & Central Africa	Caribbean	Central America	North America	South America	Central Asia & Transcaucasus	East & SouthEast Asia	Near & Middle East /SW Asia	South Asia	East Europe	West & Central Europe	SouthEast Europe	Oceania	
Production:																	
Total Production in Source Country (Kg Cannabis Equiv)	632,513	4,155,141	2,969,520	4,152,362	558,881	173,351	14,370,000	3,209,502	2,250,981	1,767,688	1,938,236	3,539,378	87,520	966,307	540,476	680,099	41,991,953
Total Seized/Lost in Source Country (Kg Cannabis Equiv)	0	0	0	0	0	0	8,440,349	0	0	0	0	0	0	0	0	0	8,440,349
Total Available for Sale (Kg Cannabis Equiv)	632,513	4,155,141	2,969,520	4,152,362	558,881	173,351	5,929,651	3,209,502	2,250,981	1,767,688	1,938,236	3,539,378	87,520	966,307	540,476	680,099	33,551,605
Farmgate Price at Origin (US$/Kg Cannabis Equiv)	1	4	4	1	483	113	936	16	27	30	50	32	665	1,385	33	1,476	258
Producer Income (US$mill)	**1**	**15**	**13**	**4**	**270**	**20**	**5,552**	**52**	**62**	**54**	**97**	**114**	**58**	**1,338**	**18**	**1,004**	**8,671**
Supply:																	
Total Intended for Consumption (Kg Cannabis Equiv)	1,261,816	1,793,604	1,811,648	5,176,379	473,486	331,427	5,929,651	2,153,740	624,050	2,425,686	1,526,315	4,271,781	1,449,034	3,226,732	401,439	694,817	33,551,605
Total Seized/Lost at Destination (Kg Cannabis Equiv)	774,031	69,060	62,779	562,161	133,443	7,657	9,889	482,186	26,431	46,699	88,153	82,239	41,845	66,368	46,513	13,606	2,513,060
Total Available for Consumption (Kg Cannabis Equiv)	487,785	1,724,544	1,748,869	4,614,218	340,042	323,770	5,919,762	1,671,554	597,619	2,378,987	1,438,162	4,189,542	1,407,189	3,160,364	354,926	681,211	31,038,545
Wholesale price at Destination US$ /gm	1	0	0	0	2	0	2	0	0	1	0	0	1	3	0	3	1
Wholesaler Income (US$mill)	**488**	**318**	**120**	**299**	**549**	**61**	**11,759**	**376**	**194**	**2,178**	**522**	**280**	**1,914**	**8,537**	**159**	**2,106**	**29,860**
Demand:																	
Estimated User Population (Thousands)	2,439	5,159	5,485	20,974	1,360	935	35,877	8,358	1,827	11,343	4,198	24,207	4,900	15,802	1,775	3,406	148,043
Estimated Actual Consumption per year (Kg Cannabis Equiv)	487,785	1,552,090	1,573,982	4,614,218	340,042	291,393	5,919,762	1,671,554	537,857	2,141,089	1,294,346	3,770,588	1,266,471	3,160,364	354,926	681,211	29,657,677
Implied Consumption per user (gms Cannabis Equiv)	200	301	287	220	250	312	165	200	294	189	308	156	258	200	200	200	200
Average Retail Price US$ /gm	2	1	0	1	7	2	11	1	1	3	1	0	2	6	5	9	4
Retailer Income (US$mill)	**1,160**	**815**	**553**	**4,651**	**2,217**	**443**	**62,488**	**1,545**	**352**	**6,228**	**1,808**	**581**	**3,147**	**19,116**	**1,726**	**6,128**	**112,959**

rate of 165 grams. This is about twice the rate indicated by some previous US studies,[31] but it is in line with the orders of magnitude shown in studies or reports from a few other countries. It also seems to be a feasible order of magnitude, taking the distribution pattern between infrequent and intensive cannabis users as well as information about the amounts of cannabis herb taken by such groups[32] in North America into account.

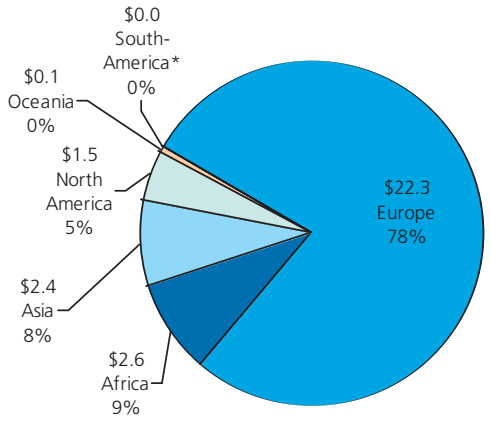
Multiplying these consumption estimates by reported prices (US$10.6 per gram at the retail level), the North American cannabis herb market was calculated to amount to some US$63 bn. This is far more than previous estimates, starting from the demand side, had suggested, but it is the lowest estimate UNODC could come up with without completely disregarding North American cannabis production estimates. The next largest market, using similar per capita consumption rates of around 200 grams per year, are Europe (US$24 bn), followed by Asia (US$9bn) and Africa (US$8 bn).

In short, there are existing data weaknesses on both the supply and the demand side with regard to cannabis herb. An attempt was made, based on the triangulation of existing data and information, to reconcile, as far as possible, the data discrepancies. This resulted in an overall estimate of the amounts available for consumption of 30,000 mt of cannabis herb, giving a global farmgate value of cannabis production of U$9 bn, a wholesale value of U$30 bn and a retail value of US$113 bn.

Valuation of cannabis resin

An evaluation of global cannabis resin production was done by UNODC, for the first time, for last year's World Drug Report. In co-operation with the Government of Morocco using modern remote sensing technology, ground verification and a yield survey, UNODC estimated resin production in that country at 3,070 mt in 2003. This led to a minimum global cannabis resin production estimate of 5,100 mt Based on a slightly different approach, analysing cannabis herb and cannabis resin seizures, a final global production estimate of 7,400 mt was established.[33]

Fig. 11: Regional distribution of cannabis resin retail sales in 2003 in billion US$ (N = US$28.8 bn)



* including Caribbean and Central America
Sources: UNODC, Illicit Drug Market Estimation Model.

Making use of existing cannabis resin estimates from the previous year and information from the main source countries, the remaining 4,330 mt were allocated to the different regions.[34] This resulted in an estimate of close to 2,000 mt for the Near and Middle East/South-West Asia region, mainly reflecting production in Afghanistan, Pakistan and Lebanon, and an estimate of around 600 mt for the Central Asia and Caucasus subregion, reflecting, in particular, important levels of production in Kazakhstan and Kyrzystan.

The model assumes that the main destination for the cannabis resin produced in North Africa is Europe, notably West and Central Europe, while the bulk of cannabis resin produced in Near and Middle East/South-West Asia region is for local consumption and only smaller amounts are destined for markets in Western Europe. The bulk of cannabis resin consumed in East Europe is assumed to originate in Central Asia. Cannabis resin produced in the Caribbean (mainly

31 Abt Associates, *What America's Users Spend on Illegal Drugs*, 1988-1998, December 2000.

32 The 1998 US household survey distinguished between three groups of cannabis users: those consuming it on 51 days or more (36% of all cannabis users), those consuming it on 12 to 51 days (20%) and those consuming it on less than 12 days (44%). Assuming that a group of 'hard-core' cannabis users smokes up to 4 grams (8 joints) for, on average, 107 days a year (equivalent to 1.2 grams of cannabis herb or 2.4 joints per day, every day), that the second group uses a daily cannabis dose of 1.5 grams for 31.5 days a year, and the third group uses a dose of 0.5 grams for 6 days a year, and applying the cannabis prevalence data from the 2003 Survey on Drug Use and Health to this distribution pattern, the average cannabis consumption per user (annual prevalence) would be equivalent to 165 grams.

33 UNODC, 2004 World Drug Report, Volume 1: Analysis, p. 129.

34 The allocation is of cannabis production according to regions is intended to show the production pattern, but is not critical for the final outcome of the wholesale or retail values of the cannabis resin market.

Table 8. Cannabis resin: Production and distribution from source countries to destination countries

Producer Regions	Total Production in Source Country (Kg Cannabis Equiv)	Total Seized/Lost in Source Country (Kg Cannabis Equiv)	Total Available for Sale (Kg Cannabis Equiv)	Transferred to Markets (Kg Cannabis Equiv)	Total Seized/ lost in Transit (Kg Cannabis Equiv)	Consumer Regions																All Countries
						East Africa	North Africa	South Africa	West & Central Africa	Caribbean	Central America	North America	South America	Central Asia & Transcaucasus	East & SouthEast Asia	Near & Middle East /SW Asia	South Asia	East Europe	West & Central Europe	SouthEast Europe	Oceania	
East Africa	121,932	0	121,932	71,099	1,886	71,099	0	0	1,522	0	0	1,357	0	0	0	0	0	68	47,851	0	34	**121,932**
North Africa	3,080,000	66,394	3,013,606	778,600	4,206	0	778,600	0	87,904	0	0	78,401	0	0	0	0	0	3,941	2,062,786	0	1,974	**3,013,606**
Southern Africa	142,041	0	142,041	125,490	1,744	0	0	125,490	496	0	0	442	0	0	0	0	0	22	15,580	0	11	**142,041**
West and Central Africa	36,027	0	36,027	147,665	2	0	0	0	36,027	0	0	0	0	0	0	0	0	0	0	0	0	**36,027**
Caribbean	256,777	0	256,777	2,106	560	0	0	0	0	2,106	0	6,574	0	0	0	0	0	353	247,568	0	177	**256,777**
Central America	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
North America	0	0	0	114,758	780	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
South America	20,000	0	20,000	2,470	1,341	0	0	0	0	0	0	483	2,470	0	0	0	0	24	17,011	0	12	**20,000**
Central Asia & Transcaucasus	638,014	0	638,014	67,551	238	0	0	0	0	0	0	0	0	67,551	0	0	0	268,738	301,510	0	215	**638,014**
East and South-East Asia	60,000	0	60,000	17,059	752	0	0	0	0	0	0	0	0	0	17,059	0	0	61	42,850	0	31	**60,000**
Near & Middle East /SW Asia	1,991,733	85,126	1,906,606	1,226,378	151,089	0	0	0	21,716	0	0	18,126	0	0	0	1,226,378	0	911	639,018	0	456	**1,906,606**
South Asia	679,584	0	679,584	338,962	25,322	0	0	0	0	0	0	9,376	0	0	0	0	338,962	471	330,539	0	236	**679,584**
Eastern Europe	20,000	0	20,000	294,894	1,434	0	0	0	0	0	0	0	0	0	0	0	0	20,000	0	0	0	**20,000**
Western & Central Europe	0	0	0	3,942,650	730,650	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
South East Europe	353,891	0	353,891	115,482	1,615	0	0	0	0	0	0	0	0	0	0	0	0	303	237,937	115,482	170	**353,891**
Oceania	0	0	0	3,316	56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
All Countries	7,400,000	151,520	7,248,480	7,248,480	921,676	71,099	778,600	125,490	147,665	2,106	0	114,758	2,470	67,551	17,059	1,226,378	338,962	294,894	3,942,650	115,482	3,316	**7,248,480**

Table 9. Cannabis resin: Supply and demand in destination countries

	Regions																All Countries
	East Africa	North Africa	South Africa	West & Central Africa	Caribbean	Central America	North America	South America	Central Asia & Transcaucasus	East & SouthEast Asia	Near & Middle East /SW Asia	South Asia	East Europe	West & Central Europe	SouthEast Europe	Oceania	
Production:																	
Total Production in Source Country (Kg Cannabis Equiv)	121,932	3,080,000	142,041	36,027	256,777	0	0	20,000	638,014	60,000	1,991,733	679,584	20,000	0	353,891	0	7,400,000
Total Seized/Lost in Source Country (Kg Cannabis Equiv)	0	66,394	0	0	0	0	0	0	0	0	85,126	0	0	0	0	0	151,520
Total Available for Sale (Kg Cannabis Equiv)	121,932	3,013,606	142,041	36,027	256,777	0	0	20,000	638,014	60,000	1,906,606	679,584	20,000	0	353,891	0	7,248,480
Farmgate Price at Origin (US$/Kg Cannabis Equiv)		95															95
Producer Income (US$mill)	**12**	**285**	**13**	**3**	**24**	**0**	**0**	**2**	**60**	**6**	**181**	**64**	**2**	**0**	**34**	**0**	**687**
Supply:																	
Total Intended for Consumption (Kg Cannabis Equiv)	71,099	778,600	125,490	147,665	2,106	0	114,758	2,470	67,551	17,059	1,226,378	338,962	294,894	3,942,650	115,482	3,316	7,248,480
Total Seized/Lost at Destination (Kg Cannabis Equiv)	1,886	4,206	1,744	2	560	0	780	1,341	238	752	151,089	25,322	1,434	730,650	1,615	56	921,676
Total Available for Consumption (Kg Cannabis Equiv)	69,214	774,394	123,746	147,663	1,546	0	113,979	1,129	67,313	16,306	1,075,290	313,640	293,460	3,212,000	113,867	3,260	6,326,804
Wholesale price at Destination US$ /gm	1	2	3	2	1	3	6	1	1	4	0	0	4	2	1	7	2
Wholesaler Income (US$mill)	**56**	**1,168**	**412**	**269**	**1**	**0**	**635**	**1**	**52**	**67**	**336**	**122**	**1,128**	**5,968**	**128**	**21**	**10,364**
Demand:																	
Estimated User Population (Thousands)	461	5,163	825	984	10	0	760	8	449	109	7,169	2,091	1,956	17,829	759	22	38,594
Estimated Actual Consumption per year (Kg Cannabis Equiv)	69,214	774,394	123,746	147,663	1,546	0	113,979	1,129	67,313	16,306	1,075,290	313,640	293,460	2,890,800	113,867	3,260	6,005,604
Implied Consumption per user (gms Cannabis Equiv)	150	150	150	150	150	0	150	150	150	150	150	150	150	162	150	150	156
Average Retail Price US$ /gm	1	2	5	3	10	8	13	2	1	22	2	1	4	7	3	24	5
Retailer Income (US$mill)	**62**	**1,455**	**604**	**443**	**15**	**0**	**1,459**	**2**	**93**	**364**	**1,711**	**226**	**1,279**	**20,723**	**329**	**79**	**28,845**

Jamaica) is destined for North America. Cannabis resin produced in South Asia (mainly Nepal) is destined for consumption within the region and for export to West and Central Europe.

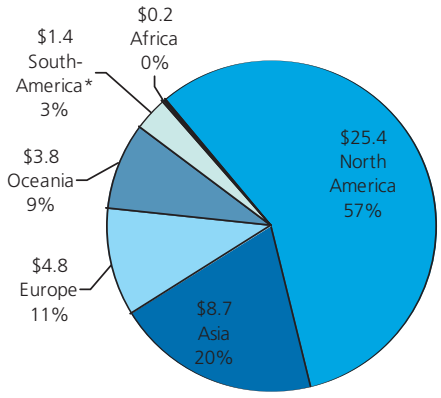
After seizures and losses, the model assumes that about 6,000 mt of cannabis resin are available for consumption. The number of cannabis resin users was deduced from the total number of cannabis users, based on the split between cannabis resin and total cannabis seizures over a ten-year period, and taking the possibility of some overlap between cannabis herb and resin consumption into account. This estimate resulted in a per capita estimate of 150 grams of cannabis resin per user. This is in line with some estimates on per capita consumption of cannabis resin obtained from countries in Europe. It is also in line with reports that the average potency of cannabis resin is still higher than the average potency of cannabis herb (even though there are important exceptions when it comes to hydroponically produced cannabis), which means that per capita consumption of cannabis resin is usually lower than per capita consumption of cannabis herb.

Based on prevalence data and per capita consumption figures, the largest cannabis market resin market is that of West and Central Europe (2,900 mt), which, when multiplied with average retail prices, gives a market value of US$21 bn. Europe thus accounts for 78% of the global cannabis resin market, followed by Africa (9%) and Asia (8%). The main cannabis resin market in Asia is the Near and Middle East; the main market in Africa is North Africa.

2.3.4 Amphetamine-type stimulants trade - valued at US$44 bn per year (retail level)

The ATS market consists of three main products: methamphetamine, amphetamine and ecstasy. Methamphetamine, amphetamine and related stimulants are combined under the category of 'amphetamines' . The global amphetamines retail market was valued at US$ 28 bn. The global ecstasy retail market, including MDMA and related substances, was valued at US$16 bn. Taken together, the ATS retail markets add up to US$44 bn. The largest ATS retail markets in economic terms are North America (57%), followed by Asia (20%), Europe (11%) and Oceania (9%).

Fig. 12: Regional distribution of ATS retail sales in 2003 in billion US$ (N = US$44.3 bn)



* including Caribbean and Central America
Sources: UNODC, Illicit Drug Market Estimation Model.

Valuation of the amphetamines market

The valuation of the amphetamines market started from a global production estimate of 332 mt (range: 278 – 401 mt), derived from production estimates based on extrapolation from seizures of amphetamines, seizures of precursors and consumption estimates. This production was 'allocated' to countries based on identifications as a source country by other countries; the number of dismantled laboratories; and seizures made in countries with dismantled laboratories that were identified by other countries as significant source countries. In addition, information from production estimates from North America was used to adjust the weights given to the different indicators. According to ONDCP, methamphetamine production in North America is estimated to range between 106 and 144 metric mt[35]

The results of these calculations suggests that the largest share of the world's production of amphetamines is in East and South-East Asia (162 tons), followed by North America (114 mt) and West and Central Europe (39 mt). While most of the production in East and South-East Asia and in North America concerns methamphetamine, European production is mainly focused on amphetamine.

35 The White House, T*he National Drug Control Strategy, February 2003.*

Table 10. ATS (excluding ecstasy): Production and distribution from source countries to destination countries

Producer Regions	Total Production in Source Country (Kg ATS (excl. ecstasy) Equiv)	Total Seized/Lost in Source Country (Kg ATS (exd. ecstasy) Equiv)	Total Available for Sale (Kg ATS (exd. ecstasy) Equiv)	Transferred to Markets (Kg ATS (excl. ecstasy) Equiv)	Total Seized/ lost in Transit (Kg ATS (exd. ecstasy) Equiv)	Consumer Regions: East Africa	North Africa	South Africa	West & Central Africa	Caribbean	Central America	North America	South America	Central Asia & Transcaucasus	East & SouthEast Asia	Near & Middle East /SW Asia	South Asia	East Europe	West & Central Europe	SouthEast Europe	Oceania	All Countries
East Africa	0	0	0	1,105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Africa	0	0	0	705	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Southern Africa	2	0	2	2,019	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
West and Central Africa	0	0	0	6,264	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Caribbean	0	0	0	533	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Central America	0	0	0	2,229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North America	113,713	1,114	112,599	111,195	491	0	0	0	0	79	331	111,195	913	0	0	0	0	0	0	0	82	112,599
South America	0	0	0	6,148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Central Asia & Transcaucasus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
East and South-East Asia	161,528	4,818	156,710	152,105	9,312	282	0	514	0	116	484	0	1,334	0	152,105	1,080	0	0	0	0	796	156,710
Near & Middle East /SW Asia	0	0	0	2,328	466	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Asia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eastern Europe	2,282	0	2,282	1,010	56	66	57	121	505	27	114	0	314	0	0	40	0	1,010	0	0	28	2,282
Western & Central Europe	39,013	0	39,013	28,666	3,979	539	461	984	4,102	221	926	0	2,555	0	0	328	0	0	28,666	0	229	39,013
South East Europe	7,311	0	7,311	2,475	547	218	186	398	1,658	89	374	0	1,032	0	0	880	0	0	0	2,475	0	7,311
Oceania	8,151	0	8,151	9,286	569	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8,151	8,151
All Countries	332,000	5,931	326,069	326,069	15,437	1,105	705	2,019	6,264	533	2,229	111,195	6,148	0	152,105	2,328	0	1,010	28,666	2,475	9,286	326,069

Table 11. ATS (excluding ecstasy): Supply and demand in destination countries

	Regions: East Africa	North Africa	South Africa	West & Central Africa	Caribbean	Central America	North America	South America	Central Asia & Transcaucasus	East & SouthEast Asia	Near & Middle East /SW Asia	South Asia	East Europe	West & Central Europe	SouthEast Europe	Oceania	All Countries
Production:																	
Total Production in Source Country (Kg ATS (excl. ecstasy) Equiv)	0	0	2	0	0	0	113,713	0	0	161,528	0	0	2,282	39,013	7,311	8,151	332,000
Total Seized/Lost in Source Country (Kg ATS (excl. ecstasy) Equiv)	0	0	0	0	0	0	1,114	0	0	4,818	0	0	0	0	0	0	5,931
Total Available for Sale (Kg ATS (excl. ecstasy) Equiv)	0	0	2	0	0	0	112,599	0	0	156,710	0	0	2,282	39,013	7,311	8,151	326,069
Laboratory Price at Origin (US$/Kg ATS (excl. ecstasy) Equiv)	848	404	1,120	25	111	982	3,028	639	25	855	897	64	1,014	2,065	1,686	7,099	1,926
Producer Income (US$mill)	**0**	**0**	**0**	**0**	**0**	**0**	**341**	**0**	**0**	**134**	**0**	**0**	**2**	**81**	**12**	**58**	**628**
Supply:																	
Total Intended for Consumption (Kg ATS (excl. ecstasy) Equiv)	1,105	705	2,019	6,264	533	2,229	111,195	6,148	0	152,105	2,328	0	1,010	28,666	2,475	9,286	326,069
Total Seized/Lost at Destination (Kg ATS (excl. ecstasy) Equiv)	0	12	1	3	0	0	491	0	0	9,312	466	0	56	3,979	547	569	15,437
Total Available for Consumption (Kg ATS (excl. ecstasy) Equiv)	1,105	693	2,017	6,261	533	2,229	110,704	6,148	0	142,793	1,862	0	953	24,687	1,928	8,718	310,632
Wholesale price at Destination US$ /pure m	8	4	4	0	1	10	31	0	0	17	9	1	14	13	12	63	22
Wholesaler Income (US$mill)	**9**	**3**	**7**	**3**	**1**	**22**	**3,426**	**3**	**0**	**2,416**	**16**	**0**	**14**	**321**	**22**	**550**	**6,813**
Demand:																	
Estimated User Population (Thousands)	221	249	403	1,252	89	372	3,459	1,025	3	17,855	143	152	156	2,057	161	794	28,391
Estimated Actual Consumption per year (Kg ATS (excl. ecstasy) Equiv)	1,105	624	2,017	6,261	533	2,229	110,704	6,148	0	128,514	1,862	0	858	24,687	1,928	7,846	295,317
Implied Consumption per user (gms ATS (excl. ecstasy) Equiv)	5	3	5	5	6	6	32	6	0	7	13	0	6	12	12	10	10
Average Retail Price US$ / puregm	43	11	11	1	1	56	153	5	0	53	49	1	40	76	26	293	96
Retailer Income (US$mill)	**47**	**7**	**22**	**8**	**1**	**125**	**16,896**	**33**	**0**	**6,761**	**91**	**0**	**34**	**1,886**	**49**	**2,296**	**28,256**

The model also reflects the general perception that amphetamines are mainly traded intra-regionally. Thus, most of the production of East and South-East Asia is for consumption within the region, and the same applies to North America and to West and Central Europe. Out of the total of 332 mt, 295 mt are estimated to be available for consumption after seizures and losses are deducted. The model assumes that 129 mt are available for consumption in East and South-East Asia, 111 mt in North America, and 25 mt in West and Central Europe. The implied per capita consumption is high for North America (32 grams per user per year)[36] and much lower in West and Central Europe (12 grams) and in East and South-East Asia (7 grams). This is a consequence of the rather high production levels estimated by the authorities in North America, and the fact that there is no information of methamphetamine or amphetamine produced in North America being shipped to other regions. Thus, all of the amphetamines produced in North America, less seizures and losses, are presumably consumed there. Using these consumption levels, the amphetamines market in North America was estimated at US$17 bn, in East and South-East Asia at US$7 bn and in Oceania and in Europe at US$2 bn each. The total market was valued at US$28 bn.

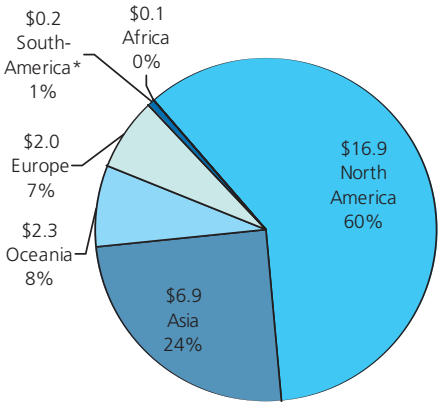
The model shows some trafficking of amphetamines to countries in Africa and South America. This, however, is only partially correct. Both Africa and South America have, in terms of ATS users, quite substantial ATS markets, but much of these markets are sourced from legally produced ATS which are subsequently diverted, rather than from illicitly produced ATS. This is a problem for the current model, as such diverted drugs were not considered in the initial phase when the model was designed. This means that the overall markets for amphetamines (licit and illicit) in Africa and South America are larger than what is reflected in this model.

Valuation of the ecstasy market

Global production of ecstasy – extrapolated from seizures of ecstasy, from seizures of ecstasy precursors and from consumption estimates was estimated at 90 mt (range: 45 – 141 mt). The allocation of production to countries/regions was based on dismantled laboratories, citations as countries of origin by other countries, and seizures (for countries that had laboratories and which were cited as countries of origin).

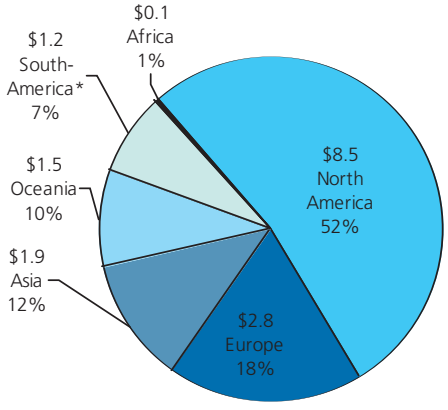
Using this approach, data suggest that the bulk of ecstasy production (69 mt out of 90 mt or 77%) continues to take place in West and Central Europe. The

Fig. 13: Regional distribution of amphetamines retail sales in 2003 in billion US$ (N = US$28.3 bn)



* including Caribbean and Central America
Sources: UNODC, Illicit Drug Market Estimation Model.

Fig. 14: Regional distribution of ecstasy retail sales in 2003 in billion US$ (N = US$16.1 bn)



* including Caribbean and Central America
Sources: UNODC, Illicit Drug Market Estimation Model.

36 Per capita consumption of amphetamines, according to these estimates, is still lower in North America than the corresponding estimates for cocaine, another stimulant.

Table 12. Ecstasy: Production and distribution from source countries to destination countries

Producer Regions	Total Production in Source Country (Kg Ecstasy Equiv)	Total Seized/Lost in Source Country (Kg Ecstasy Equiv)	Total Available for Sale (Kg Ecstasy Equiv)	Transferred to Markets (Kg Ecstasy Equiv)	Total Seized/ lost in Transit (Kg Ecstasy Equiv)	Consumer Regions: East Africa	North Africa	South Africa	West & Central Africa	Caribbean	Central America	North America	South America	Central Asia & Transcaucasus	East & SouthEast Asia	Near & Middle East /SW Asia	South Asia	East Europe	West & Central Europe	SouthEast Europe	Oceania	All Countries
East Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
North Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Southern Africa	931	0	931	1,135	59	0	0	931	0	0	0	0	0	0	0	0	0	0	0	0	0	**931**
West and Central Africa	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Caribbean	0	0	0	612	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Central America	0	0	0	568	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
North America	12,269	824	11,445	36,327	32	0	0	0	0	0	0	11,445	0	0	0	0	0	0	0	0	0	**11,445**
South America	1,179	0	1,179	4,075	206	0	0	0	0	0	0	0	1,179	0	0	0	0	0	0	0	0	**1,179**
Central Asia & Transcaucasus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
East and South-East Asia	4,087	0	4,087	5,920	367	0	0	0	0	0	0	0	0	0	4,087	0	0	0	0	0	0	**4,087**
Near & Middle East /SW Asia	207	0	207	456	100	0	0	0	0	0	0	0	0	0	0	207	0	0	0	0	0	**207**
South Asia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Eastern Europe	0	0	0	762	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Western & Central Europe	69,150	3,092	66,058	28,601	1,623	0	0	204	22	612	568	24,882	2,896	0	1,833	249	0	762	28,601	274	5,156	**66,058**
South East Europe	1,594	0	1,594	1,867	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,594	0	**1,594**
Oceania	784	0	784	5,940	748	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	784	**784**
All Countries	90,200	3,916	86,284	86,284	3,182	0	0	1,135	22	612	568	36,327	4,075	0	5,920	456	0	762	28,601	1,867	5,940	**86,284**

Table 13. Ecstasy: Supply and demand in destination countries

	Regions: East Africa	North Africa	South Africa	West & Central Africa	Caribbean	Central America	North America	South America	Central Asia & Transcaucasus	East & SouthEast Asia	Near & Middle East /SW Asia	South Asia	East Europe	West & Central Europe	SouthEast Europe	Oceania	All Countries
Production:																	
Total Production in Source Country (Kg Ecstasy Equiv)	0	0	931	0	0	0	12,269	1,179	0	4,087	207	0	0	69,150	1,594	784	90,200
Total Seized/Lost in Source Country (Kg Ecstasy Equiv)	0	0	0	0	0	0	824	0	0	0	0	0	0	3,092	0	0	3,916
Total Available for Sale (Kg Ecstasy Equiv)	0	0	931	0	0	0	11,445	1,179	0	4,087	207	0	0	66,058	1,594	784	86,284
Farmgate Price at Origin (US$/Kg Ecstasy Equiv)	0	0	6,961				24,483	39,421		21,803	23,010			7,887	23,001	47,014	11,839
Producer Income (US$mill)	**0**	**0**	**6**	**0**	**0**	**0**	**280**	**46**	**0**	**89**	**5**	**0**	**0**	**521**	**37**	**37**	**1,022**
Supply:																	
Total Intended for Consumption (Kg Ecstasy Equiv)	0	0	1,135	22	612	568	36,327	4,075	0	5,920	456	0	762	28,601	1,867	5,940	86,284
Total Seized/Lost at Destination (Kg Ecstasy Equiv)	0	0	59	0	17	2	32	206	0	367	100	0	1	1,623	28	748	3,182
Total Available for Consumption (Kg Ecstasy Equiv)	0	0	1,076	22	595	565	36,295	3,869	0	5,552	356	0	761	26,977	1,840	5,192	83,102
Wholesale price at Destination US$ /gm	93	93	75	49	233	155	103	164	93	93	77	93	85	57	97	143	93
Wholesaler Income (US$mill)	**0**	**0**	**81**	**1**	**138**	**88**	**3,723**	**633**	**0**	**518**	**27**	**0**	**65**	**1,530**	**179**	**741**	**7,724**
Demand:																	
Estimated User Population (Thousands)	0	0	108	2	59	57	3,561	387	0	555	36	0	139	2,698	184	519	8,304
Estimated Actual Consumption per year (Kg Ecstasy Equiv)	0	0	1,076	22	595	565	32,665	3,869	0	5,552	356	0	685	26,977	1,840	5,192	79,396
Implied Consumption per user (gms Ecstasy Equiv)	0	0	10	10	10	10	9	10	0	10	10	0	5	10	10	10	10
Average Retail Price US$ /gm	204	204	87	60	280	157	260	244	204	330	125	204	193	91	139	298	204
Retailer Income (US$mill)	**0**	**0**	**94**	**1**	**166**	**89**	**8,503**	**944**	**0**	**1,835**	**45**	**0**	**132**	**2,458**	**257**	**1,549**	**16,072**

next largest ecstasy producing region is North America (12 mt), followed by East and South-East Asia (4 mt). The model results also suggest that Europe is the only region with important ecstasy exports. More than half of the ecstasy produced in West and Central Europe is destined for export to other regions. With ecstasy prices almost three times the level seen in West and Central Europe, North America seems to be a particularly lucrative market, but European ecstasy exports go to most other regions as well.

Deducting seizures and losses, about 80 mt remain available for consumption. Using existing prevalence estimates and applying an average rate of 10 grams per person per year (equivalent to some 100 pills a year, or two pills per weekend), the largest ecstasy market appears to be North America (33 mt), followed by West and Central Europe (27 mt). Multiplying these amounts with reported prices, the North American ecstasy market appears to be substantially larger (US$8.5 bn) than the European market (less than US$3 bn). However, this may change, as there are strong indications that the North American ecstasy market is shrinking. As outlined in the beginning of this chapter, data used for the market calculations were those published in last year's World Drug Report (2.7 million ecstasy users for North America). The numbers published in this year's World Drug Report are already 15% less (2.3 million ecstasy users in North America), and – using school surveys as an early indicator for subsequent trends in the general population - one can still expect further declines to take place. While the bulk of the ecstasy market is in North America and Europe, 30% of the global ecstasy market is in other parts of the world, notably in Asia (12%), Oceania (10%) and South America (7%).

2.4 Conclusions

This review of UNODC's global drug market valuation has highlighted some of the complexities involved in making such estimations. The technical details of the model have not been discussed in this review. Clearly there are still areas where estimates can be improved.As new information emerges, it will be incorporated into the model. The overall figure of US$322 bn should be seen as representing reasonable order of magnitude. As stated previously, some market estimates can be made with more precision than others. The estimates for the opiates market (US$65 bn) and the cocaine market (US$70 bn), for example, are quite strong – because there is rigorous data at least on the production side. The estimates for the ATS (US$44 bn) and the cannabis resin (US$28bn) markets are also reasonably well grounded; but the cannabis herb market estimate (US$113 bn), remains rather weak due to the paucity of underlying data.

Ideally, results from the top-down and the bottom-up approaches should match, simply because there is no drug consumption without production and there will be, most probably, no drug production without a demand for drugs. This does not preclude the possibility that stocks can be built-up or depleted, thus distorting this relationship in the short-term.

One key parameter for analysing the market from both sides is still largely missing: the average consumption per user. Only some vague and often contradictory information is currently available, often from case studies which may or may not be representative of a locality, a country or a region. This put a severe constraint on this exercise. More systematic research on quantities consumed could greatly improve the rigour of the results.

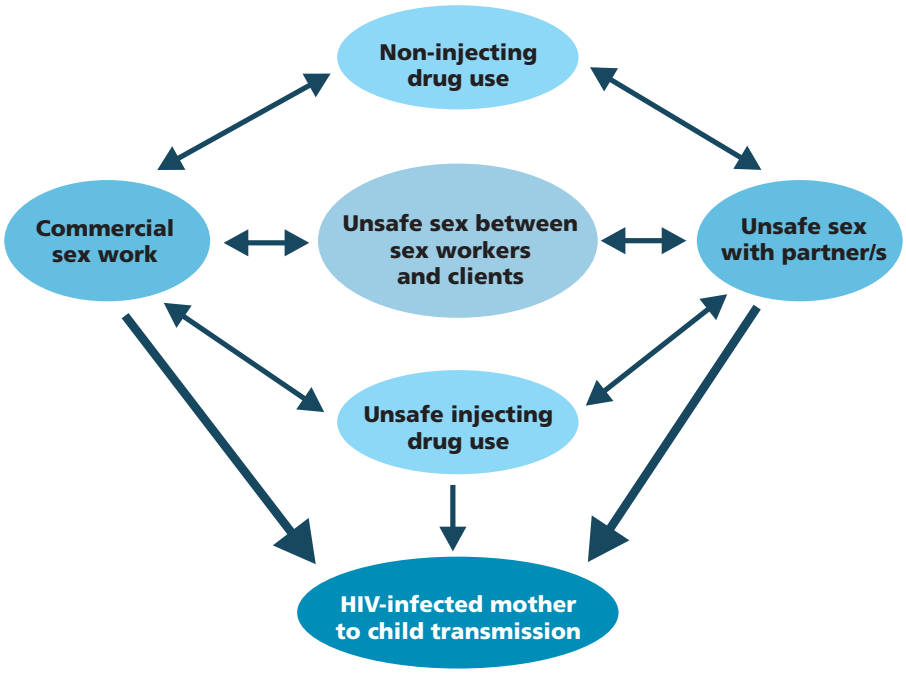
In presenting this work in progress, UNODC shares its understanding of the illicit drug markets, as well as lack of it in some areas, in order to improve the common level of understanding, stimulate discussion and prompt new research to overcome existing gaps in information.

3. HIV/AIDS AND DRUGS

3. HIV/AIDS and Drugs

Globally, sexual transmission of HIV continues to be the most common way the virus is spread, but drug use is contributing to the pandemic in at least four ways. First, the most common and best-researched method of transmission is via the use of contaminated injection equipment among people who inject drugs. Second, there is sexual transmission of the virus between those who inject drugs and their sexual partners. The dual transmission risk in the case of sex workers who also inject drugs leads to epidemics that expand quickly and act as a bridge to the rest of the population. Third, non-injecting use of drugs such as cocaine and amphetamine-type stimulants leads to high-risk sexual behaviour. And finally, HIV can be transmitted from an infected mother - a commercial sex worker, an injecting drug user and/or a sexual partner of a drug user - to her child. While very little systematic information is available on this particular mode of transmission related to drug use, anecdotal examples suggest that this could be a potential entry point for HIV to get into the general population. For example, during 1996–2001, most of the HIV-infected infants in the Russian Federation were born to mothers who were either injecting drug users or sexual partners of injecting drug users.

Fig. 1: HIV transmission routes related to drug abuse



3.1 Epidemiology of HIV/AIDS and drug use

Worldwide, more than 55 million people use opiates, cocaine and amphetamine-type stimulants, and an estimated 13.2 million people inject these drugs. Most (78%) injecting drug users live in developing and transitional countries.[1]

While the relationship between injecting drug use and HIV/AIDS is relatively well researched, little systematic epidemiological information is available on the extent and patterns of HIV transmission caused by non-injecting drug use. This is unfortunate because there is emerging evidence that the use of cocaine, crack and amphetamine-type stimulants increases sexual risk taking behaviour related to HIV transmission. Some of this information has been reviewed later in this chapter. However, to date, an epidemiological review of HIV/AIDS related to drug use still has to rely mostly on information related to injecting drug use, which undoubtedly underestimates the real impact of drug use on the HIV/AIDS epidemics. Consequently, prevention of HIV transmission related to drug use continues to focus mostly on injecting drug use, missing out the potential opportunities of primary and secondary drug use prevention for stopping the spread of the virus.

3.1.1 Injecting drug use

In the early stages of the pandemic, HIV/AIDS among injecting drug users was largely viewed as self-limiting, affecting injectors and their immediate sexual partners but not leading to a more generalised spread of the virus. Recent work on the Asian and Eastern European HIV/AIDS epidemics has proven this perspective to be incorrect.[2] Globally, it is estimated that 5% -10% of all HIV infections are attributable to injecting drug use, mostly via the use of contaminated injection equipment.[3] In many countries of Europe, Asia, the Middle East and the Southern Cone of South America, the use of non-sterile injection equipment has remained the most important mode of HIV transmission, accounting for 30%-80% of all reported infections.

The risk of HIV transmission in an injecting community is dependent, among other things, on the substances involved. Injection frequency is highly correlated with HIV transmission,[4] and there are differences in the rate of injection between drugs. Among heroin dependent individuals, it is common to inject 1 - 3 times a day. Cocaine, on the other hand, is commonly injected more than 10 times a day. This increases significantly the likelihood of HIV transmission as it reduces the chances of sterile injecting equipment being used each time.[5]

The context in which drugs are injected can also impact on the risk of transmission. "Shooting galleries" are communal drug use venues that are associated with a high risk of needle and syringe sharing. A needle or syringe in a shooting gallery may be used by hundreds of injection drug users. Frequenting shooting galleries to inject has been associated with a markedly higher risk of acquiring HIV.[6] "Syringe mediated drug sharing" is the use of a metered syringe to divide a drug among several users,[7] and occurs in many countries, being particularly prevalent in countries of the former Soviet Union.[8] In

1 Aceijas C, Stimson GV, Hickman M, Rhodes T. Global overview of injection drug use and HIV infection among injection drug users. London: Centre for Research on Drugs and Health Behaviour on behalf of the United Nations Reference Group on HIV/AIDS Prevention and Care among IDU in Developing and Transitional Countries, 2004.

2 WHO/ UNAIDS/ UNODC. *Advocacy Guide*:HIV/AIDS Prevention Among Injecting Drug Users. WHO, 2004.

3 UNAIDS, Institute OS, Agency CID. The Warsaw declaration: A framework for effective action on HIV/AIDS and injection drug use. 2nd International Policy Dialogue. Warsaw; WHO/ UNAIDS/ UNODC. *Advocacy Guide: op.cit*.

4 Bruneau J, Lamothe F, Soto J, Lachance N, Vincelette J, Vassal A, Franco EL. Sex-specific determinants of HIV infection among injection drug users in Montreal. *Cmaj* 2001;164:767-73.

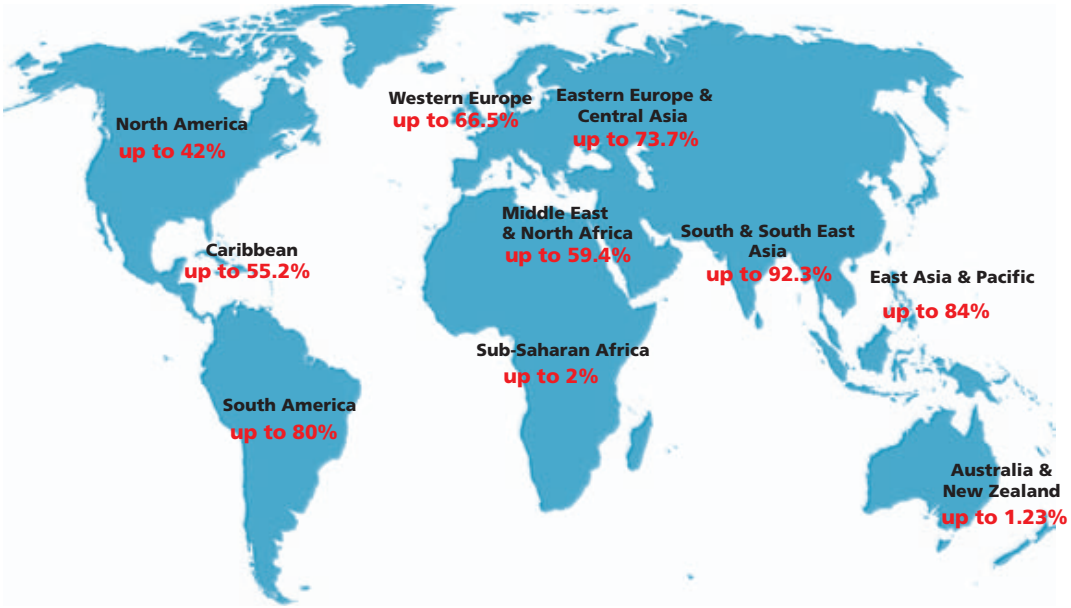
5 Chaisson RE, Bacchetti P, Osmond D, Brodie B, Sande MA, Moss AR. Cocaine use and HIV infection in intravenous drug users in San Francisco. Jama 1989;261:561-5; Strathdee SA, Galai N, Safaiean M, Celentano DD, Vlahov D, Johnson L, Nelson KE. Sex differences in risk factors for HIV seroconversion among injection drug users: a 10-year perspective. *Arch Intern Med* 2001;161:1281-8.

6 Schoenbaum EE, Hartel D, Selwyn PA, Klein RS, Davenny K, Rogers M, Feiner C, Friedland G. Risk factors for human immunodeficiency virus infection in intravenous drug users. *N Engl J Med* 1989;321:874-9; Celentano DD, Vlahov D, Cohn S, Anthony JC, Solomon L, Nelson KE. Risk factors for shooting gallery use and cessation among intravenous drug users. *Am J Public Health* 1991;81:1291-5.

7 Grund JP, Friedman SR, Stern LS, Jose B, Neaigus A, Curtis R, Des Jarlais DC. Syringe-mediated drug sharing among injection drug users: patterns, social context and implications for transmission of blood-borne pathogens. *Soc Sci Med* 1996;42:691-703.

8 Green ST, Taylor A, Frischer M, Goldberg DJ. 'Frontloading' ('halfing') among Glasgow drug injectors as a continuing risk behaviour for HIV transmission. *Addiction* 1993;88:1581-2; Van Ameijden EJ, Langendam MW, Notenboom J, Coutinho RA. Continuing injecting risk behaviour: results from the Amsterdam Cohort Study of drug users. *Addiction* 1999;94:1051-61; Hunter GM, Donoghoe MC, Stimson GV, Rhodes T, Chalmers CP. Changes in the injecting risk behaviour of injection drug users in London, 1990-1993. Aids 1995;9:493-501; Rodes A, Vall M, Casabona J, Nuez M, Rabella N, Mitrani L. [Prevalence of human immunodeficiency virus infection and behaviors associated with its transmission among parenteral drug users selected on the street]. *Med Clin* (Barc) 1998;111:372-7.

Fig. 2: HIV/AIDS prevalence (%) among injecting drug users (1998- 2003)



Source:UN Reference Group on HIV/AIDS prevention and care among IDUs, 2003

Asia, where needle and syringe sharing is common,[9] injection by "professional injectors" is widespread.[10] Professional injectors sell the drug and the injection (so that the drug user does not have to self-inject). Professional injectors tend to use the same needle and syringe repeatedly, multiplying the chance of HIV transmission dramatically.[11]

Epidemics driven by injecting drug use have different characteristics than epidemics where sexual transmission is the main mode of infection.[12] Most importantly, the efficiency of HIV transmission per injection is almost six times higher than for heterosexual acts. Most studies have also found that heroin injectors inject about 1-3 times per day, and cocaine users even more frequently, so the number of possible exposures is also greater. Due to the greater efficiency and higher frequency of risk-exposure associated with injecting drug use, these epidemics tend to spread more rapidly than those driven by sexual transmission. Soon after HIV is introduced into a community of injecting drug users, infection levels in these populations can rise from zero to 50–60% within 1–2 years.[13]

Most injectors are males, but the proportion of female injectors has risen rapidly, particularly in Asia and Eastern Europe. Female addicts may pay for their drugs through sex work, and this may lead to transmission of the virus to clients outside the injecting community.[14]

The epidemiology of HIV/AIDS in injecting drug user populations varies from country to country. Injecting drug use is well established in Western Europe and North America, where HIV/AIDS prevalence in injecting drug user populations is generally low, apart from Southern Europe, Western Canada and the eastern

9 Reid G, Costigan G. Revisiting 'The Hidden Epidemic': A situational assessment of drug use in Asia in the context of HIV/AIDS. Melbourne: Centre for Harm Reduction, 2002; Bezziccheri S, Bazant W. Drugs and HIV in South East Asia. Bangkok: UNODC Regional Centre for East Asia and the Pacific, 2004.

10 Reid G, Costigan G. Revisiting 'The Hidden Epidemic': A situational assessment of drug use in Asia in the context of HIV/AIDS. Melbourne: Centre for Harm Reduction, 2002.

11 Kral AH, Bluthenthal RN, Erringer EA, Lorvick J, Edlin BR. Risk factors among IDUs who give injections to or receive injections from other drug users. *Addiction* 1999;94:675-83.

12 Pisani E, Garnett GP, Grassly NC, Brown T, Stover J, Hankins C, Walker N, Ghys PD. Back to basics in HIV prevention: focus on exposure. *BMJ* 2003;326:1384-7.

13 WHO *Training Guide for HIV Prevention Outreach to Injection drug users*. Geneva. 2003.

14 WHO. Where sex work, drug injecting and HIV overlap (In Preparation).

seaboard of the United States. It is widespread throughout most countries of Asia, and Central and Eastern Europe. Injecting is an increasing form of illicit drug administration in Latin America and the Middle East. Africa and Central America face early stages of injecting drug use, though there are worrying trends of increases in many cities in these regions.[15]

Asia

Injecting drug use is the most prevalent method of HIV transmission in Indonesia, Viet Nam, Malaysia, Myanmar, Nepal, China and parts of India:[16]

- Indonesia: In 2000, only 1% of known HIV infections were attributed to injecting drug use. In 2004, the figure was nearly 20%. In Jakarta and Bali, 35%- 56% of injecting drug users are HIV infected.[17]
- Viet Nam: The overall HIV/AIDS prevalence among injecting drug users is 32%,[18] but prevalence is much higher in Hai Phong (over 70%), Ho Chi Minh City (over 80%) and Binh Dinh (nearly 90%).[19]
- Thailand: The HIV/AIDS prevalence among injecting drug users is estimated at 54%, with an estimated annual incidence of 5 – 10% for the past 10 years. [20]
- Myanmar: HIV/AIDS prevalence among injecting drug users is estimated at 65%.[21]
- Nepal: HIV/AIDS prevalence among injecting drug users is estimated at 45%. [22]
- China: The use of contaminated injection equipment is the most common mode of HIV transmission in China. In 2002, there were 410,000 registered injectors in China, though the real size of the injecting drug use community is estimated to be several times larger.[23] Overall, it is estimated that 43% of injecting drug users are HIV positive,[24] although individual provinces show much higher rates, such as Xinjiang (84%), and Yunnan provinces (58%-80%).[25]
- India: HIV/AIDS prevalence among injecting drug users has been determined in several cities and regions, including Manipur (58%),[26] Delhi (14%), Karnataka (3%), Mumbai (25%), West Bengal (3%) and Chennai (64%).[27]

15 Archibald C, Bastos F, Beyrer C, Crofts N, Des Jarlais D Grund J-P, Hacker M, Heimer R, Rhodes T and Saidel T. The nature and extent of HIV/AIDS among injecting drug users. Evidence For Action: Establishing the Evidence-Base for Effective HIV Prevention among Injecting Drug Users. WHO. Geneva (In preparation)

16 Costigan, G., Crofts, N., and Reid G. *Manual for Reducing Drug-Related Harm in Asia*. 2003, Centre for Harm Reduction and Asian Harm Reduction Network. Melbourne; Detels, R. HIV/AIDS in Asia: an introduction *AIDS Education and Prevention 2004* Vol 16, Supp. A, June: p. 1-6; UNAIDS. Rhodes, T., Platt, L., Filatova, K., Sarang, A., Davis, M., and Renton, A. *Behavioural Risk Factors in HIV Transmission in Eastern Europe and Central Asia* Geneva: in press.

17 Costigan, G., Crofts, N., and Reid G. 2003 op. cit.

18 Hien, N.T., Long, N.T. and Huan, T.Q. HIV/AIDS epidemics in Vietnam: evolution and responses. *AIDS Education and Prevention* 2004 Vol 16, Supp. A, June: p.137-154.

19 Hien, N. "HIV prevalence trends and risk behaviours among injection drug users in Vietnam". in *Global Research Network Meeting on HIV Prevention in Drug-Using Populations, 3rd Annual Meeting*. 2000. Durban, South Africa

20 Costigan, G., Crofts, N., and Reid G. 2003 op. cit.

21 Dehne, K., Adelekan, M., Chatterjee, A. and Weiler, G. The need for a global understanding of epidemiological data to inform human immunodeficiency virus (HIV) prevention among injection drug users. *Bulletin on Narcotics*, vol. LIV, Nos 1 and 2, 2002

22 Aceijas C et al 2004. op cit.; Burrows, D. *Policy and Environment Assessment: Illicit Drug Use, the Burden of Drug-related Harm, and HIV Vulnerability in Cambodia* The Policy Project, Phnom Penh. 2003

23 Reid and Costigan 2002. op.cit.

24 Wu, Z., Rou, K. and Cui, H. *The HIV/AIDS epidemic in China: history, current strategies and future challenges* AIDS Education and Prevention 2004 Vol 16, Supp. A, June: p. 7-17

25 UNAIDS. HIV/AIDS: *China's Titanic Peril*, *2001 Update of the AIDS situation and Needs Assessment report*., UN theme Group on HIV/AIDS in China. China, 2001.

26 Dorabjee, J. and L. Samson, A multi-centre rapid assessment of injection drug use in India. 2000. Int J Drug Policy 11(1-2): p. 99-112; Dorabjee, J., *Building the capacity of NGOs and other institutions to work with injecting drugs users in India*. 2002, Family Health International: New Delhi, India.

27 NACO (2004b). NACO, HIV Prevalence levels State wise: 1998 – 2003, accessed at http://www.nacoonline.org/factsnfigures/Statewisehiv.pdf.

Box 1: HIV/AIDS in China and India

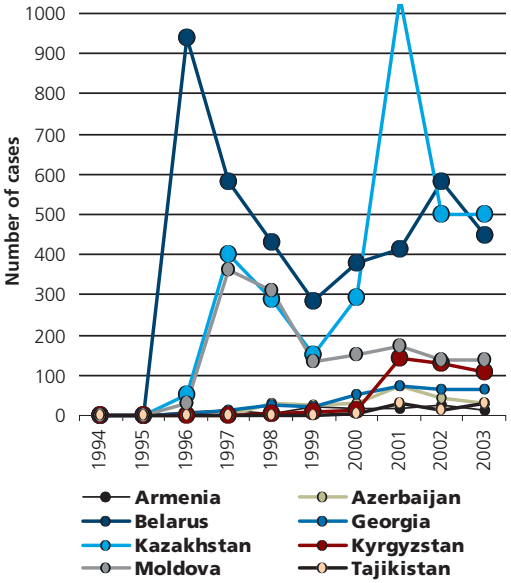
The HIV/AIDS epidemics in China and India are predicted to become two of the largest ever. In 2003, the Chinese Centre for Disease Control and Prevention, the National Centre for AIDS/STD Control and Prevention, WHO, UNAIDS and the US Centres for Disease Control and Prevention estimated that there are 840,000 people living with HIV/AIDS in China, a national prevalence rate of less than 0.1%. Between 1995 and 2000, HIV prevalence increased by about 30% each year. The rate of increase has been much greater in the first few years of the 21st century, reaching 122% in 2003. Most HIV infections are among injecting drug users. Heroin is the most commonly used drug, accounting for almost all drug treatment admissions, and use rates have been on the increase. The use of amphetamine-type stimulants is also expanding in China. A survey conducted in Guizhou province in 1999 found that heroin was the most commonly tried drug among school students in this region (3%), followed by ATS (0.7%) and then cannabis (0.3%). There are also reports that methamphetamine is injected.[28]

In India, an estimated 5.1 million people are HIV infected, a national prevalence rate of 0.9% among the general adult population in 2004.[29] UNODC has found that the use of a range of drugs, including ATS and cocaine, is increasing in parts of India, and that opiate users are switching from snorting or smoking heroin to injection of heroin and pharmaceutical drugs such as buprenorphine and dextropropoxyphene.[30]

Central Asia and Eastern Europe

Injecting drug use transmission accounts for the bulk of infections in the Russian Federation, Ukraine, Moldova, Belarus, Kazakhstan, Uzbekistan, Estonia, Latvia, Lithuania, Armenia, Azerbaijan, Georgia and Poland.[31] HIV prevalence above 50% among injecting drug users has been found in Svetlogorsk (Belarus) and Togliatti, Irkutsk, Tver and Kaliningrad (Russian Federation) Karaganda, Pavlodar (Kazakhstan); over 30% in Poltava (Ukraine), Rostov, Samara and Saint Petersburg (Russian Federation); and over 15% in Kharkiv (Ukraine), Ekaterinburg (Russian Federation), Minsk (Belarus), and Moldova.[32]

Fig. 3: Newly registered HIV infections among injecting drug users, selected CIS countries (1994 – 2003)



Source: EuroHIV, End-year report 2003

28 Wu Z, Rou K and Cui H. The HIV/AIDS Epidemic in China: current strategies and future challenges *AIDS Education and Prevention* 16 Suppl A: 7-17. 2004.

29 MAP 2004. op.cit.

30 *India Country Profile*. UN Office on Drugs and Crime. New Delhi 2003.

31 UN Development Program (UNDP). *HIV/AIDS in Eastern Europe and the Commonwealth of Independent States - Reversing the epidemic*: Facts and policy options 2004: Bratislava.

32 UNAIDS Rhodes T et al. In Press. op. cit.; Dehne et al 2002. op. cit.

Fig. 4: Newly registered HIV infection among injecting drug users, Russian Federation and Ukraine (1994 – 2003)

Source: EuroHIV, End-year report 2003

Western Europe

The prevalence of HIV among injecting drug users in Finland, Germany, Greece, Iceland, Luxemburg, Slovenia, Switzerland, Austria and the United Kingdom is less than or near 5%, but is much higher in countries such as France (up to 19%), Italy (up to 65%), and Spain (up to 66%).[33]

Middle East and North Africa

Injecting drug use is the most prevalent mode of HIV transmission in Iran, Bahrain and Libyan Arab Jamahiriya, and it is suspected of being prominent in several other countries such as Algeria, Egypt, Morocco, Tunisia and Sudan.[34]

- Iran: It is estimated that there are 1.2 million opioid-dependent people and approximately 15,000 people living with HIV/AIDS; 60%-75% of these infections are attributable to the sharing of contaminated injection equipment.[35]
- Egypt: In Cairo, about 30% of heroin users inject, though the proportion is lower (16%) in other regions, and 59% of injecting drug users report sharing injection equipment. High-risk sexual behaviour is prevalent among drug users in Cairo, with 51% of heroin users reporting sex with a sex worker, 10% engaging in male-to-male sex, and 59% reporting that they never use condoms.[36]
- Libyan Arab Jamahiriya: Approximately 50% of heroin users seeking treatment are HIV infected.[37]

Latin America

HIV infections among injecting drug users have been found in Uruguay (24%); Asunción, Paraguay (15%), Bogotá, Colombia (16%);[38] and Puerto Rico (30%-45%).[39] The dominance of crack cocaine as a drug of choice in some countries in the region and the emergence of an increasing supply of heroin have implications for injecting drug use and risk behaviour in the Southern Cone.

- Brazil: Injecting drug use, mainly of cocaine, played a major role in the first wave of HIV infection in the 1980s and early 1990s, as it is in new epidemics in the south and southwest of the country. High HIV infection prevalence among injecting drug users have been determined in Rio de Janeiro (25%) and in Sao Paolo (almost 75%) in 2000,[40] though the prevalence has fallen in these cities in recent years.[41]
- Argentina: In 2002, it was estimated that 12,000 and 34,000 injecting drug users were infected with HIV, and HIV prevalence among injecting drug users in treatment in 2003 was 39%.[42]

33 Archibald et al. In Preparation. Op. cit.

34 Alaei, K., Alaei, A., Saeydi, M., Mansoori, D. and Vaziri, S. *The adherence to antiretroviral therapy in HIV IDUs compared to non IDU HIV infected and non HIV infected cases.* in XV International AIDS Conference. 2004. Bangkok

35 Archibald et al. In Preparation. Op. cit.

36 El Shimi, T. UNODC Global Assessment Programme in Egypt, Cairo, 2003

37 Abdool, R. Mission report on Libya – drug abuse and HIV/AIDS, Nairobi, 2004

38 Aceijas C et al 2004. op cit.

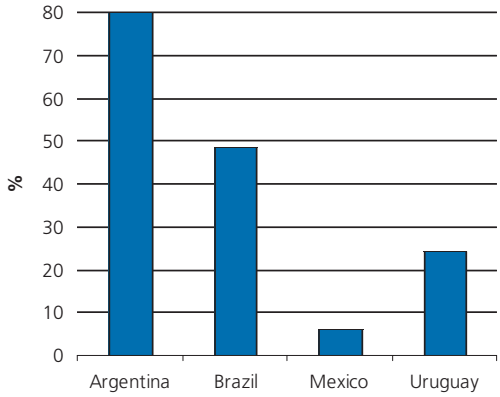
39 Monitoring the AIDS Pandemic (MAP) 2000. op. cit.

40 Monitoring the AIDS Pandemic (MAP). *HIV and AIDS in the Americas: an epidemic with many faces*. 2000. Monitoring the AIDS Pandemic Network.

41 Bastos, F.I., de Pina, Md.F. and Szwarcwald C.L. The social geography of HIV/AIDS among injection drug users in Brazil *International Journal of Drug Policy* 2002 13: 137-144.

42 Sosa-Estani, S., Rossi, D. and Weissenbacher, M. *Epidemiology of human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome in injection drug users in Argentina: high seroprevalence of HIV infection.* Clin Infect Dis, 2003. 37 Suppl 5: p. S338-42.

Fig. 5: Estimated maximum proportion of HIV infected injecting drug users, selected countries, Latin America (1998-2003)



Source: UN Reference Group on HIV/AIDS Prevention and Care among IDUs, 2003

North America

HIV spread rapidly among injecting drug users in the northeast United States in the 1980s, reaching levels of 50% or more in New York City and Newark, New Jersey, and urban areas directly connected with these centres such as San Juan, Puerto Rico. By contrast, HIV prevalence outside the region has remained lower, with the lowest prevalence found west of the Mississippi River in cities such as Houston, Denver, Los Angeles, and Seattle. In each of these cities, HIV prevalence among injectors has remained below 10%.[43] Various studies have concluded that between 14% and 47% of injecting drug users are HIV positive in Canada.[44]

Africa

The epidemics of sub-Saharan Africa have been dominated by sexual transmission of the virus, but injecting drug use is becoming more common in a number of countries in the region:

- Nigeria: HIV prevalence among the general population was found to be much lower in Kano state (3.8%) and River State (7.7%) than among injecting drug users in these same states (14.3%). Despite 95% of interviewed injecting drug users being aware of the modes of HIV transmission, sharing of needles and syringes was common and only 20% used condoms.[45]
- Kenya: The national HIV/AIDS prevalence among adult population is 6.7%-9%, but it is estimated that in the injecting population prevalence is 68%-88%. In Mombassa, a sero-prevalence study among injecting drug users found that 49.5% were HIV positive and 70% had hepatitis C; six out of every seven female injecting drug users were HIV infected.[46]

Vulnerable Groups

Although all injecting drug users using potentially contaminated injecting equipment are at high risk of HIV infection, specific populations are especially susceptible to infection. These include young injecting drug users because of inexperience in obtaining clean injecting equipment (see Box 3); female injecting drug users because of sexual risk and injecting practices over which they may have less control; and the increasing number of drug-injecting sex workers, both male and female. Similarly, prisoners are at an increased risk of HIV infection because they lack access to preventive and care services).

43 Archibald et al. In Preparation. op. cit.

44 Aceijas C et al. 2004. op cit.

45 Lawal, R. UNODC study on drugs and HIV/AIDS in Nigeria, 2003

46 Ndetei, D. UNODC study on the linkages between drug use, injecting drug use and HIV/AIDS in Kenya, University of Nairobi, 2004

Box 2: Drug abuse and HIV/AIDS in prison settings

Prisons are a high-risk environment for HIV transmission. Drug use in general, and injection drug use in particular, as well as violence and sex between men are widespread in prisons. Drug users are often over-represented in prison populations and may continue using drugs while incarcerated. A significant proportion of drug users have a history of incarceration, often for drug-related crimes.

Frequent sharing of contaminated drug injection equipment is the predominant mode of HIV transmission among prisoners.[47] HIV is also transmitted in prisons through unsafe sexual behaviour, sometimes associated with sexual violence. Prison overcrowding, gang violence, lack of protection for the youngest inmates, corruption and poor prison management increase significantly the vulnerability to HIV transmission among inmates.

High turnover rates (worldwide at any given time, there are 10 million) prison inmates, with an annual turnover of 30 million also fuel the spread of HIV and other blood-borne infections. After release, prisoners return to social networks in the general community, thereby facilitating the spread of HIV infections to the non-incarcerated community.

Box 3: The decreasing age of initiation into drug abuse and drug injecting

The age at which people begin to use drugs varies considerably and depends on factors such as social cohesion, norms and drug availability. In the Commonwealth of Independent States, for example, injecting is especially common among young people, with initiation starting as early as 12 years of age. Transition to injecting drug use is an important step in increasing HIV risk to an individual. The most common reasons for making the transition are perceived superior effectiveness and superior efficiency of drug administration.[48] Among women, having a partner who injects is associated with initiation,[49] whereas in men it is the peer group that is the major social influence. Low socioeconomic status, homelessness, low educational attainment, a younger age of substance use initiation and polysubstance use are all associated with transition to injecting.[50] Heroin is the most common drug first injected.[51]

The initiation phase into drug injecting is associated with higher levels of risk behaviour because the technique has to be learnt, generally in a communal injecting environment. For example, in northern Viet Nam, once individuals were comfortable with administering the injection themselves, injectors reported engaging in fewer circumstances conducive to sharing. However, even after the initiation phase, requiring help to inject is a risk factor for HIV transmission.[52] A review of HIV transmission related to injecting drug use in the countries of Central and Eastern Europe, the Baltic States and Commonwealth of Independent States found that young people in this region engage in two of the highest risk behaviours for acquiring HIV – sharing injecting equipment among injecting drug users and having unprotected sex with sex workers and other sexual partners – at a higher rate than in many other parts of the world.[53]

47 Martin V, Cayla JA, Moris ML, Alonso LE, Perez R. Predictive factors of HIV-infection in injection drug users upon incarceration. *Eur J Epidemiol* 1998;14:327-31.

48 Bravo MJ, Barrio G, de la Fuente L, Royuela L, Domingo L, Silva T. Reasons for selecting an initial route of heroin administration and for subsequent transitions during a severe HIV epidemic. *Addiction* 2003;98:749-60; Swift W, Maher L, Sunjic S. Transitions between routes of heroin administration: a study of Caucasian and Indochinese heroin users in south-western Sydney, Australia. *Addiction* 1999;94:71-82.

49 Archibald et al. In Preparation. op. cit.

50 Dunn J, Laranjeira RR. Transitions in the route of cocaine administration—characteristics, direction and associated variables. *Addiction* 1999;94:813-24; Crofts N, Louie R, Rosenthal D, Jolley D. The first hit: circumstances surrounding initiation into injecting. *Addiction* 1996;91:1187-96.

51 Crofts N, Louie R, Rosenthal D, Jolley D. The first hit: circumstances surrounding initiation into injecting. *Addiction* 1996;91:1187-96; Des Jarlais DC, Casriel C, Friedman SR, Rosenblum A. AIDS and the transition to illicit drug injection—results of a randomized trial prevention program. Br J *Addict* 1992;87:493-8.

52 O'Connell JM, Spittal P, Li K, Tyndall MW, Hogg RS, Schechter MT, Wood E. Requiring help injecting independantly predicts incident HIV infection in a prospective cohort study of injection drug users. Proceedings of the XVth International AIDS Conference. Bangkok, 2004.

53 UNICEF. *Walking on two legs* 2001. op. cit.

3.2 Drug use, sexual behaviour and HIV/AIDS

The relationship between drug abuse and sexual behaviour is complex, and it is more difficult to quantify HIV transmission related to this drug abuse-sexual behaviour interaction than it is for equipment sharing among drug injectors. Different drugs affect sexual behaviours differently, and the context of use is clearly important. HIV is transmitted sexually through a range of practices, some more effective in transmission than others. High-risk sexual behaviour includes engaging in unprotected sex (penetrative sex without the use of a condom),[54] exchanging sex for drugs or money,[55] and having multiple sex partners.[56]

While most HIV transmission among injectors worldwide is related to the sharing of injection equipment, in some areas, sexual behaviour is primarily responsible for HIV transmission among injecting drug users. Interventions aimed at reducing risky injection practice may not be as effective at reducing risky sexual behaviour.[57] There is also increasing evidence of the link between HIV epidemics among injecting drug users and other drug users and of the spread of HIV epidemics in the general population through sexual networks.[58]

The learned behaviour of associating drugs with sex makes it difficult to reduce high-risk sexual behaviour.[59] Frequency of drug abuse correlates with increased sexual activity, as does the frequency of high-risk sex.[60] Rates of condom use among drug users vary widely. In a study of 26,982 injecting drug users and crack users from 22 cities in the United States, over 80% reported having unprotected sex within the last 30 days.[61] A study of injecting drug users in Brazil found that only 12.5% always used a condom, whereas 77.7% reported they always used a clean needle and syringe.[62] However, in France in 2003, 64% of injecting drug users used condoms as their primary form of contraception compared to 10% of the general population, indicating that injecting drug users are more aware of the risk of HIV transmission in that country.[63]

There are also strong links between drug use, particularly crack use,[64] injecting drug use and risky sexual behaviour.[65] HIV transmission increases in populations with high-risk behaviours related to both drug injecting and sex. This appears to be true of all drugs, but is especially so for cocaine injectors. There also appears to be a link among these high-risk behaviours. Injecting drug users who inject with a needle and syringe known to have been previously used by another injector (without any attempt to disinfect it) are more likely to report non-use of condoms than injecting drug users who attempt to protect themselves from injection-related HIV infection.[66] HIV infection among injecting drug users in one study was associated with injection of cocaine, more frequent injection, needle sharing, and injection in a shooting gallery. Sexual behaviour variables associated with HIV incidence include a sexually transmitted infection, male homosexual behaviour, and sex with another injecting drug user.[67]

54 Watkins KE, Metzger D, Woody G, McLellan AT. Determinants of condom use among intravenous drug users. Aids 1993;7:719-23; Saxon AJ, Calsyn DA, Whittaker S, Freeman G, Jr. Sexual behaviors of intravenous drug users in treatment. *J Acquir Immune Defic Syndr* 1991;4:938-44.

55 Astemborski J, Vlahov D, Warren D, Solomon L, Nelson KE. The trading of sex for drugs or money and HIV seropositivity among female intravenous drug users. *Am J Public Health* 1994;84:382-7; Kim MY, Marmor M, Dubin N, Wolfe H. HIV risk-related sexual behaviors among heterosexuals in New York City: associations with race, sex, and intravenous drug use. Aids 1993;7:409-14.

56 Calsyn DA, Saxon AJ, Wells EA, Greenberg DM. Longitudinal sexual behavior changes in injecting drug users. Aids 1992;6:1207-11.

57 Booth RE, Watters JK. How effective are risk-reduction interventions targeting injecting drug users? Aids 1994;8:1515-24; Welp EA, Lodder AC, Langendam MW, Coutinho RA, van Ameijden EJ. HIV prevalence and risk behaviour in young drug users in Amsterdam. *Aids* 2002;16:1279-84.

58 Lowndes, C.M., Renton, A., Alary, M., Rhodes, T., Garnett, G. and Stimson G. Conditions for widespread heterosexual spread of HIV in the Russian Federation: implications for research, monitoring and prevention. *International Journal of Drug Policy* 14 (2003): 45-62

59 Paul JP, Stall R, Davis F. Sexual risk for HIV transmission among gay/bisexual men in substance-abuse treatment. AIDS *Educ Prev* 1993;5:11-24.

60 Archibald et al. In Preparation. Op. cit.

61 Ibid.

62 Telles PR, Bastos FI, Guydish J, Inciardi JA, Surratt HL, Pearl M, Hearst N. Risk behavior and HIV seroprevalence among injecting drug users in Rio de Janeiro, Brazil. Aids 1997;11 Suppl 1:S35-42.

63 Vidal-Trecan G, Warszawski J, Coste J, Bajos N, Delamare N, Grenier-Sennelier C, Boissonnas A. Contraceptive practices of non-HIV-seropositive injecting drug users. *Eur J Epidemiol* 2003;18:863-9.

64 Booth RE, Kwiatkowski CF, Chitwood DD. Sex related HIV risk behaviors: differential risks among injection drug users, crack smokers, and injection drug users who smoke crack. *Drug Alcohol Depend* 2000;58:219-26.

65 Booth RE, Watters JK, Chitwood DD. HIV risk-related sex behaviors among injection drug users, crack smokers, and injection drug users who smoke crack. *Am J Public Health* 1993;83:1144-8.

66 Booth RE. Gender differences in high-risk sex behaviours among heterosexual drug injectors and crack smokers. *Am J Drug Alcohol Abuse* 1995;21:419-32.

67 Archibald et al. In Preparation. Op. cit.

3.2.1 Cocaine and crack, and sexual HIV transmission

There is a clear association between the use of cocaine and/or crack and HIV infection.[68] Cocaine and crack are drugs highly associated with an increase in sexual activity[69]. This is linked to perceived increases in libido, the trade of drugs for sex, and the binge pattern of consumption associated with these drugs.

A United States study of 6,291 injecting and non-injecting drug users found that, compared to heroin injectors, cocaine injectors reported a higher rate of risky sexual behaviour such as sex with multiple partners.[70] A study of Spanish and Brazilian injecting drug users found sexual abstinence and consistent condom use among heroin injectors, but these behaviours were less common among cocaine injectors, who also had a higher number of casual partners and partners who inject themselves. Cocaine injectors also reported sharing injection equipment more frequently.[71]

Crack users are more likely to engage in higher levels of risky sexual activity than other drug users,[72] and the use of crack is linked with sex work.[73] A United States study found that, after controlling for a range of variables, current crack users were over five times more likely than non-crack using drug users to exchange sex for drugs or money.[74] Female crack users in another United States study who traded sex for drugs reported 13 times more partners a month than those that did not trade sex for drugs. They were also substantially more likely to report a history of sexually transmitted infections.[75] A study of African American residents of two communities in Houston revealed that a history of crack use significantly predicted the trading of sex for money and drugs, and sellers of sex were more likely to have engaged in recent high-risk sexual behaviour than those who had never sold sex.[76] An analysis of in-depth interviews of crack users in Portland (United States) found that sexual activity involving multiple anonymous partners often takes place within the context of crack use.[77] An analysis of in-depth interviews with crack users in Trinidad and Tobago also found high rates of trading sex for drugs.[78] People who both use crack and inject drugs were found to be more likely to engage in sex with multiple partners, trade sex for drugs, have unprotected sex, and have sex with other injection drug users. [79]

3.2.2 Amphetamine use and sexual transmission of HIV

There is a significant body of literature associating the use of amphetamines with sexual activity and risky sexual behaviour. Amphetamines are used during the sexual act to prolong stamina and increase pleasure.[80] In the United States, HIV infected amphetamine users were found to have an average of more than nine sexual partners in two months. The average number of unprotected vaginal, anal, and oral sex acts over the two month period were 21, 6 and 42, respectively.[81] Only 50% used a condom during these acts. In Ethiopia, a study of 561 young people aged 15-24 years found the use of khat (a local amphetamine-type stimulant) predicted the likelihood of having ever engaged in sexual

68 Grella CE, Anglin MD, Wugalter SE. Cocaine and crack use and HIV risk behaviors among high-risk methadone maintenance clients. *Drug Alcohol Depend* 1995;37:15-21.

69 Murray JB. An overview of cocaine use and use. *Psychol Rep* 1986;59:243-64.

70 Hudgins R, McCusker J, Stoddard A. Cocaine use and risky injection and sexual behaviors. *Drug Alcohol Depend* 1995;37:7-14.

71 Bastos FI, Perez C, Telles PR, Rodes A, Hacker M, Casabona J. Sexual and injecting habits of cocaine and heroine in two different settings. Cross-cultural insights from Rio de Janeiro (RJ), Brazil, and Barcelona (BCN), Spain Proceedings of the XIV International AIDS Conference. Barcelona, July 7 - 12, 2002.

72 Archibald et al. In Preparation. Op. cit.

73 Carlson RG, Siegal HA. The crack life: an ethnographic overview of crack use and sexual behavior among African-Americans in a midwest metropolitan city. *J Psychoactive Drugs* 1991;23:11-20.

74 Archibald et al. In Preparation. Op. cit.

75 Logan TK, Leukefeld C. Sexual and drug use behaviors among female crack users: a multi-site sample. *Drug Alcohol Depend* 2000;58:237-45.

76 Baseman J, Ross M, Williams M. Sale of sex for drugs and drugs for sex: an economic context of sexual risk behavior for STDs. *Sex Transm Dis* 1999;26:444-9.

77 Balshem M, Oxman G, van Rooyen D, Girod K. Syphilis, sex and crack cocaine: images of risk and morality. *Soc Sci Med* 1992;35:147-60.

78 Djumalieva D, Imamshah W, Wagner U, Razum O. Drug use and HIV risk in Trinidad and Tobago: qualitative study. *Int J STD AIDS* 2002;13:633-9.

79 Hoffman JA, Klein H, Eber M, Crosby H. Frequency and intensity of crack use as predictors of women's involvement in HIV-related sexual risk behaviors. *Drug Alcohol Depend* 2000;58:227-36.

80 von MC, Brecht ML, Anglin MD. Use ecology and drug use motivations of methamphetamine users admitted to substance use treatment facilities in Los Angeles: an emerging profile. *J Addict Dis* 2002;21:45-60; Kall K, Nilsonne A. Preference for sex on amphetamine: a marker for HIV risk behaviour among male intravenous amphetamine users in Stockholm. *AIDS Care* 1995;7:171-88.

81 Semple SJ, Patterson TL, Grant I. The context of sexual risk behavior among heterosexual methamphetamine users. *Addict Behav* 2004;29:807-10.

activity.[82] In a study of men in Northern Thailand found that those reporting a history of sexually transmitted infections were more likely to have used amphetamines.[83]

In a study of HIV infected men who have sex with men,[84] it was found that methamphetamine use was associated with high rates of anal sex, low rates of condom use, multiple sex partners, and anonymous sex. Users reported using the drug to promote sexual please and to reduce negative feelings associated with being HIV infected. This was also demonstrated in a study of male homosexual and heterosexual non-injecting amphetamine users attending HIV clinics in California.[85] In contrast, being HIV infected has been shown to be associated with condom use among amphetamine injectors in Sweden.[86]

There is evidence of a link between amphetamine use and risky sexual behaviour in East and Southeast Asia, and thus the recent increase in the availability of these drugs in the region has implications for HIV control.[87] In an HIV vaccine trial among injecting drug users in Bangkok, amphetamines use was associated with unprotected vaginal intercourse.[88]

Ecstasy use has mainly been studied in industrialised countries. Compared to those who use amphetamines but not ecstasy, ecstasy users tend to be of a higher socioeconomic status and have more same sex partners.[89] There is evidence that ecstasy use is associated with unsafe sexual activity. For example, in a study of young homosexual and bisexual men in New York City, ecstasy use was associated with having more male partners, more visits to bars, clubs, sex clubs or bathhouses, and greater likelihood of having unprotected anal sex.[90]

3.2.3 Opioid use and sexual HIV transmission

Heroin is believed to reduce sexual activity and impair sexual arousal.[92] However, there is significant evidence that heroin dependent individuals engage in sexual activity. In a study of predominantly heroin injecting drug users in London, 80% had been sexually active within the preceding six months, with an average of 2.1 non-commercial opposite sex partners. Two-thirds

Box 4: Increasing abuse of amphetamine type substances in South-East Asia

The increase in the use of amphetamine-type substances (ATS), mainly methamphetamine, in the East Asia Pacific region began in the mid-1990s and has spread even to those countries where opioid use has traditionally been widespread. Methamphetamine pills are the main form of ATS found in Thailand, Myanmar, Cambodia, Viet Nam and the Lao People's Democratic Republic, while crystalline methamphetamine predominates in Japan, Philippines, Singapore, Brunei Darussalam and Malaysia. Methamphetamine use continued to increase during 2003-2004 in many countries in the region, although it stabilized in Brunei Darussalam, Japan, the Philippines and declined in Thailand. Methamphetamine was the primary drug for which people sought drug treatment in the Philippines in 2002, accounting for 3,466 (58%) of the 5,965 admissions to drug treatment that year.[91]

82 Taffa N, Klepp KI, Sundby J, Bjune G. Psychosocial determinants of sexual activity and condom use intention among youth in Addis Ababa, Ethiopia. *Int J STD AIDS 2002*;13:714-9.

83 Melbye K, Khamboonruang C, Kunawararak P, Celentano DD, Prapamontol T, Nelson KE, Natpratan C, Beyrer C. Lifetime correlates associated with amphetamine use among northern Thai men attending STD and HIV anonymous test sites. *Drug Alcohol Depend* 2002;68:245-53.

84 Semple SJ, Patterson TL, Grant I. Motivations associated with methamphetamine use among HIV+ men who have sex with men. *J Subst Use Treat* 2002;22:149-56.

85 Molitor F, Truax SR, Ruiz JD, Sun RK. Association of methamphetamine use during sex with risky sexual behaviors and HIV infection among non-injection drug users. *West J Med* 1998;168:93-7.

86 Kall K. The risk of HIV infection for noninjecting sex partners of injection drug users in Stockholm. *AIDS Educ Prev* 1994;6:351-64.

87 Archibald et al. In Preparation. Op. cit.

88 Vanichseni S, Des Jarlais DC, Choopanya K, Mock PA, Kitayaporn D, Sangkhum U, Prasithiphol B, Hu DJ, Van Griensven F, Mastro TD, Tappero JW. Sexual Risk Reduction in a Cohort of Injection drug users in Bangkok, Thailand. *J Acquir Immune Defic Syndr* 2004;37:1170-1179.

89 Archibald et al. In Preparation. Op. cit.

90 Klitzman RL, Greenberg JD, Pollack LM, Dolezal C. MDMA ('ecstasy') use, and its association with high risk behaviors, mental health, and other factors among gay/bisexual men in New York City. *Drug Alcohol Dependence* 2002;66:115-25.

91 Information in this text box is drawn from UNODC *Amphetamine-type Stimulants in East Asia and the Pacific: Analysis of 2003 regional ATS questionnaire: regional and national overviews of ATS and other drug trends and related data collection systems* United Nations Office on Drugs and Crime Regional Centre for East Asia and the Pacific. Bangkok. Publication 3/2004

(66%) had vaginal intercourse at least once a week. There was a high level of risky sexual behaviour, with 68% never using condoms with primary partners and 34% never using condoms with casual partners. Those having sexual intercourse most often were least likely to use condoms. About 10% of the study group were HIV infected.[93]

Across most studies, there is a clear link between the regularity of sexual intercourse with the primary sexual partner and the frequency of condom use. Condom use is low with regular partners of heroin users, especially within marriage,[94] and higher with casual partners.[95] The severity of opioid dependence usually increases the likelihood of risky sexual behaviour.[96] Severe dependence can also lead to an increase in commercial sex work, and, consequently, reduced use of condoms.[97]

3.2.4 Female sex workers

Sex workers who inject drugs are more likely than non-injecting sex workers to:

- Work in ways that offer least possibility to protect themselves from HIV infection (for example, street or highway sex work);
- Have unprotected sex for additional payment;
- Have more clients per week;
- Have sex partners who are also injecting drug users;
- Share injection equipment with injecting partners or clients in sex-for-drug transactions.[98]

Sex work and injecting drug use are highly associated in some areas. In Moscow, 31% of sex workers are also injecting drug users.[99] In Togliatti in the Russian Federation, 50% of female injecting drug users reported having exchanged sex for goods or money in the past and of these, 86% were currently active sex workers.[100] Estimates of the proportion of female sex workers who inject drugs in the Russian Federation as a whole vary between 25% and 90%,[101] and it is estimated that approximately 30% of female sex workers across the Newly Independent States (NIS) of the former Soviet Union are injecting drug users.[102] While data are limited, studies of female injecting drug users in Eastern Europe estimate that between 20% and 50% are involved in sex work, and in Central Asia, the proportion is between 10% and 25%.[103]

One study in Viet Nam found that in Ho Chi Minh City, over 15% of street-based female sex workers reported injecting drugs within the last six months. In Hanoi, high rates of injecting were found among street-based sex workers and sharing injecting equipment was common, especially with the primary sexual partner. In this group, drug use began after becoming a sex worker. Some subjects of the study reported drug use as a 'trend' among sex workers. 'Partnering' with a male injecting drug user was common, with the female earning to support the couple's drug habit. In return, the male provided protection, transport and accommodation.[104]

In many countries, a higher proportion of sex-working injecting drug users are found at the street level than in brothels, bars, hotels and other settings.[105] In some settings, drug injecting is stigmatised in brothels; in others, pimps or others associated with the sex industry may be drug users or dealers.

Sex workers who use drugs show higher HIV/AIDS prevalence in some studies. A study of 400 street-based sex workers in Ho Chi Minh City, Viet Nam, found that infection was associated with injecting by the sex

92 Smith DE, Moser C, Wesson DR, Apter M, Buxton ME, Davison JV, Orgel M, Buffum J. A clinical guide to the diagnosis and treatment of heroin-related sexual dysfunction. *J Psychoactive Drugs* 1982;14:91-9.

93 Rhodes T, Donoghoe M, Hunter G, Soteri A, Stimson GV. Sexual behaviour of drug injectors in London: implications for HIV transmission and HIV prevention. *Addiction* 1994;89:1085-96.

94 Archibald et al. In Preparation. Op. cit.

95 Archibald et al. In Preparation. Op. cit; Klee H, Faugier J, Hayes C, Morris J. Risk reduction among injection drug users: changes in the sharing of injecting equipment and in condom use. *AIDS Care* 1991;3:63-73.

96 Archibald et al. In Preparation. Op. cit

97 Gossop M, Griffiths P, Powis B, Strang J. Severity of heroin dependence and HIV risk. II. Sharing injecting equipment. *AIDS Care* 1993;5:159-68.

98 WHO/ UNAIDS/ UNODC. *Advocacy Guide* 2004. op.cit.

99 UNICEF *Walking on Two Legs* 2001. op.cit.

100 Lowndes, C.M., Rhodes, T., Judd, A., Mikhailova, L., Sarang, A., Rylkov, A., Tichonov, M., Platt, L. and Renton, A. Female injection drug users who practise sex work in Togliatti City, Russian Federation: HIV prevalence and risk behaviour. Abstract MoPeC3501. XIV International AIDS Conference, Barcelona July 7-12, 2002.

101 Lowndes et al 2003. op.cit.

102 Dehne, K. Sex work and injection drug use in Eastern Europe and Central Asia: Epidemiological Overview. Paper presented at 13th International Conference of the Reduction of Drug-Related Harm, Ljublana 3-7 March 2002.

103 UNAIDS Rhodes et al In Press.op.cit.

104 Thao, L.T.L., Giang, L., Bain, D.L. and Lindan, C.P. The Evolving HIV Epidemic in Ho Chi Minh City, Vietnam. in XIV International AIDS Conference. 2002. Barcelona, Spain; Tran et al 2004 op.cit.

worker, injecting by the regular sex partners of the sex worker or by their partners, and with younger (under 26) sex workers.[106] In Nepal in 1999, HIV prevalence was approximately 20% among sex workers, 50% among injecting drug users and 75% among sex workers who inject drugs.[107] In Manipur (India), the prevalence of HIV among the sex workers who inject drugs was 57%, compared with 20% of those who did not inject.[108]

Evidence suggests that sex workers who inject drugs face increased risk of sexual HIV transmission because they often have a higher number of clients, are more willing to engage in unprotected sex, and have sexual partners who also inject drugs. Sex workers who inject may also be more likely to pass on HIV if infected. Lower levels of condom use have been shown among those injecting drugs and selling or buying sex. For example, only 10% of injecting drug users from three cities in Indonesia, many of who had multiple commercial sex and other partners, reported condom use.[109] Among injecting drug users in Vancouver, Canada, and in several cities of the United States, condom use with all types of sexual partners (paying, casual, and primary partners) is rare or low among those exchanging sex for drugs or money.[110]

Female drug users are more likely than male drug users to trade sex for drugs. In an analysis of 1,055 drug users in the United States, female users were more than three times more likely to engage in trading sex for drugs than male users. Between 6% and 11% of male users traded sex for drugs. Homelessness, unemployment and the use of crack (in order of decreasing correlation) were all associated with trading sex for drugs.[111]The exchange of sex for drugs is a risk factor for HIV infection.[112]

3.2.5 Male sex workers

Risk behaviours among male sex workers are relatively under-researched. A 1994 study found important differences between male street sex workers and those working at home. Street-workers were more likely to inject drugs, to have a heterosexual preference, to have no other occupation, to have more clients, and to have a more negative working attitude. The study also found that male sex workers were more likely to engage in anal intercourse with steady clients, with clients whom they trusted regarding condom use, with clients they felt sexually attracted to, or when in dire need of drugs. Of those who had anal intercourse in the previous year, a majority had consistently used condoms. The same factors that encourage anal intercourse also appear conducive to unprotected intercourse.[113]

3.2.6 Sexual partners of drug users

Sexual partners of injecting drug users are at risk for acquiring HIV infection, and it is this link that is said to be responsible for the generalised epidemics in Asia and Eastern Europe. Partners of injecting drug users are not necessarily injectors themselves, and therefore the risk is predominantly sexual. For example, a study of 516 injecting drug users and their partners in London found that 62% of respondents' primary and casual partners did not inject drugs. In a study of 650 male injecting drug users in three cities in Indonesia, 68% had been sexually active within the last year. Of the total study group, 24% had engaged in sexual activity with a regular partner, 40% with a sex worker, 29% with a casual female partner, 48% with multiple partners, and

105 Ibid; Jenkins, C. "Injecting sex workers or sex working injectors: crossing risk zones." *In National Institute on Drug Use. 2001 Global Research Network Meeting on HIV Prevention in Drug-Using Populations: Fourth Annual Meeting Report October 11-12 2001 Melbourne Australia* Bethesda: 2002.

106 Tuan, N.A., Hien, N.T., Chi, P.K., Giang, L.T., Thang, B.D., Long, H.T., Saidel, T. and Detels, R. Injection drug use among street-based sex workers: A high risk behaviour for HIV transmission. Abstract C10772. XIV International AIDS Conference, Barcelona July 7-12, 2002.

107 Jenkins 2002. op.cit.

108 Panda, S., Bijaya, L., Sadhana Devi, N., Foley, E., Chatterjee, A., Banerjee, D., Naik, T.N., Saha, M.K. and Bhattacharya, S.K. Interface between drug use and sex work in Manipur. *Natl Med J India*, 2001. 14(4): p. 209-11.

109 Pisani, E., Dadun, Sucahya, P.K., Kamil, O. and Jazan, *S. Sexual behavior among injection drug users in 3 Indonesian cities carries a high potential for HIV spread to non-injectors*. Journal of Acquired Immune Deficiency Syndrome. 2003;34(4):403-406

110 Weeks, M.R., Grier, M., Romero-Daza, N., Puglisi-Vasquez, M.J. and Singer, M. *Streets, drugs, and the economy of sex in the age of AIDS. Women's Health.* 1998;27(1-2):205-229; Paone, D., Cooper, H., Alperen, J., Shi, Q. and Des Jarlais, D.C. *HIV risk behaviours of current sex workers attending syringe exchange: the experiences of women in five US cities*. *AIDS Care*. 1999;11(3):269-280.

111 Elwood WN, Williams ML, Bell DC, Richard AJ. Powerlessness and HIV prevention among people who trade sex for drugs ('strawberries'). *AIDS Care* 1997;9:273-84.

112Tortu S, Beardsley M, Deren S, Williams M, McCoy HV, Stark M, Estrada A, Goldstein M. HIV infection and patterns of risk among women drug injectors and crack users in low and high sero-prevalence sites. *AIDS Care* 2000;12:65-76.

113 De Graaf 1994. op.cit.

Box 5: Female injecting drug users

In the World Health Organization Multi-City Study on Drug Injecting and Risk of HIV Infection during 1989-1992, analysis was conducted on the basis of gender. The share of injecting drug users who were female ranged from 5% in Bangkok to 44% in Berlin, with a mean of 25%.[114] It is estimated that women account for approximately 17% of the estimated 1 million injection drug users reported in China, and in some provinces, this can reach up to 40%.[115] The average age of female drug users (between 22 and 27) in China is considerably lower than male drug users and approximately half of female drug users have engaged in sex work. Syphilis rates among female drug users vary between 1% and 29%.[116]

Women injecting drug users are at greater risk of acquiring HIV than male injecting drug users, partly due to the large proportion of women injectors who are also sex workers, and partly due to their combination of injection-related and sexual risks:[117]

- Female injecting drug users are more likely than men to report being injected by another person and to have assistance injecting.[118] Being injected by another person or being helped to inject is a predictor of HIV infection.[119] Also, many female injecting drug users are dependent on their sexual partners to obtain drugs, which compromises their ability to negotiate safer sex or safer injecting practices.[120]
- Men will usually inject first if a male-female couple is sharing injecting equipment, again lead ing to greater likelihood of women acquiring HIV from contaminated injecting equip ment.[121]
- Women's access to services of all kinds is lower than that of male injectors. This has been found among HIV prevention programmes in Central and Eastern Europe and South-East Asia, and among drug dependence treatment programmes in South Asia.

Various social and cultural norms force women more than men to hide their drug use. More so than for men, drug use, sex work, and HIV infection carry great social stigmas for women. The very invisibility of women injecting drug users increases their risk of acquiring HIV. It is difficult for interventions to target this group and, therefore, they may not receive education, information, and prevention materials as readily or as often as male injecting drug users.[122]

The interaction between injecting drug use and participation in the sex industry is complex. Drug use may lead to sex work due to financial needs.[123] Sex work can lead to injecting drug use[124] because drug use is often used as a means to cope with the emotional demands of sex work.[125]

In at least some countries, female injecting drug users are more likely to be in a sexual relationship with another injecting drug user than are male injecting drug users. A woman in partnership with a male injecting drug user tends to default to sex work in order to support both her and her partner's drug dependence.[126]

114 Malliori, M., Zunzunegui, M.V., Rodriguez-Arenas, A. and Goldberg, D. "Drug injecting and HIV-1 infection: major findings from the Multi-City Study" in G Stimson, DC Des Jarlais and A Ball *Drug injecting and HIV infection* 1998 WHO/ UCL Press. Geneva/London.

115 *Xinhua News Agency* Female IDUs, key population for fighting AIDS in China: experts Friday, June 25, 2004.

116 Khoshnood, K. and Weber, S. Social Vulnerability of Injection Drug Users to HIV/AIDS in China: Determinants and Responses *The Yale-China Health Journal* Autumn 2003 Volume 2.

117 Bronzan, R.N., Zhussupov, B., Favorov, M., Kryukova, V., Muratbayeva, G., Kuznetsov, N., Shakarishvili, A. and Ryan, C.A. *Risk factors for HIV infection among injection drug users in Kazakhstan: implications for prevention intervention*. in XV International AIDS Conference. Bangkok, 2004. 2004. Bangkok.

118 Gore-Felton, C., Somlai, A.M., Benotsch, E.G., Kelley, J.A., Ostrovski, D. and Kozlov, A. *The influence of gender on factors associated with HIV transmission risk among young Russian injection drug users*. Am J Drug Alcohol Use, 2003. 29(4): p. 881-94; MacRae, R. and E. Aalto, *Gendered power dynamics and HIV risk in drug-using sexual relationships*. AIDS Care, 2000. 12(4): p. 505-15; O'Connell, J.M., Spittal, P. Li, K., Tyndall, M.W., Hogg, R.S., Schechter, M.T. and Wood, E. *Requiring help injecting independently predicts incident HIV infection in a prospective cohort study of injection drug users*. in XV International AIDS Conference. 2004. Bangkok.

119 O'Connell, J.M. 2004 op.cit.

120 Bronzan, R.N. 2004 op.cit.; Osimani, M.L., *The challenge of implementation of preventive programs in a developing country: experiences, situations, and perspectives in Uruguay*. Clin Infect Dis, 2003. 37 Suppl 5: p. S422-6.

121 Strathdee, S.A. and Sherman, S.G. 2003 op.cit.

122 Osimani 2003. op.cit.

123 de Graaf R, Vanwesenbeeck I, van Zessen G, Straver CJ, Visser JH. Male prostitutes and safe sex: different settings, different risks. *AIDS Care* 1994;6:277-88.

124 Tran TN, Detels R, Hien NT, Long HT, Nga PTH. Drug use, sexual behaviours and practices among female sex workers in Ha Noi, Viet Nam - a qualitative study. *Int j Drug Policy* 2004;15:189 - 195.

125 Alegria M, Vera M, Freeman DH, Jr., Robles R, Santos MC, Rivera CL. HIV infection, risk behaviors, and depressive symptoms among Puerto Rican sex workers. *Am J Public Health* 1994;84:2000-2.

126 Bronzan, R.N. 2004 op.cit.; Osimani 2003. op.cit.; MacRae, R. and E. Aalto 2003. op.cit.

1.5% with a male partner. Thirty-five percent had had unprotected commercial sex.[127]

A study in Sao Paulo, Brazil, found that 40% of HIV infected females were infected through unsafe sexual activity with injecting drug users.[128] A study of the wives of HIV positive male injecting drug users in Manipur, India, revealed that 45% were HIV infected, although none reported ever injecting, and 97% reported having sexual relations only with their husbands. Only 15% reported using condoms at least half the time within the last year. An association was also established between the husband reporting a sexually transmitted infection and HIV prevalence in wives, suggesting either that sexually transmitted infections are a marker of unsafe sexual activity or that they facilitate the transmission of HIV.[129] Studies have found that 8% of sexual partners of HIV infected injecting drug users in the Russian Federation have been infected, compared to 6% in Ukraine and a similar percentage in Belarus. In Argentina, it is estimated that 12% of all HIV infections in women result from unsafe sexual activity with a male injecting drug user.[130]

A consistent characteristic across studies is that injecting drug users are less likely to use condoms with primary sexual partners. In situations where the partner also injects, injecting drug users are also more likely to share injecting equipment with their primary partner. This is illustrated by a study of injecting drug users at needle-syringe programmes in the north-eastern United States, where 54% said they never used a condom with their primary sexual partner compared with 33%, who never used one with non-primary partners. Twice as many injecting drug users reported that they shared injecting equipment with their primary sexual partner as compared with a non-primary partner.[131]

3.2.7 Men and women who have same sex partners

Having sex with another man creates additional risk of HIV transmission for male injecting drug users. A survey of this population in Denver in the United States demonstrated high-risk sexual behaviours with multiple partners of both genders. Over 80% had more than one male partner, 20% had non-primary female partners, and 15% exchanged sex for money or drugs. Condom use was inconsistent and infrequent for all types of sex (vaginal, anal and oral) and with all types of partners; 90% injected cocaine and 59% used methamphetamine - drugs associated with risky injecting and sexual practices; 45% of this sample was HIV infected. Significantly, in this study, men who had sex with men and who injected did not identify strongly with either men who have sex with men or injecting drug users.[132] Other studies have shown that men who have sex with men and inject identify most strongly with their drug use rather than their sexual practice.[133]

In a 10-year analysis of the "AIDS Linked to the Intravenous Experiences" (ALIVE) project in Baltimore, the United States, having sex with another man nearly doubled the risk of HIV sero-conversion among injecting drug users.[134] In a study of Latino injecting drug users in New York, compared with heterosexual men, gay men were significantly more likely to have received money or drugs for sex (64% versus 33%), and women who have sex with women were significantly more likely to have had unprotected sex with an injecting drug user.[135]

In Canada, men who have sex with men and who inject were found to be younger than other men who have sex with men and are more likely to be HIV infected,

127 Pisani E, Dadun, Sucahya PK, Kamil O, Jazan S. Sexual behavior among injection drug users in 3 indonesian cities carries a high potential for HIV spread to noninjectors. *J Acquir Immune Defic Syndr* 2003;34:403-6.

128 Araujo PJ, Andreazzi RC, Gomes RR, Theodosio SBC, Francatto GHF, Zuniga V, Anselmo L, Oliveira MA, Sanches MS, Karter J, Lima JRR, Maerrawi IE. Intervention using female condom in a harm reduction project. Proceeding of the XVth International AIDS Conference. Bangkok, 2004.

129 Panda S, Chatterjee A, Bhattacharya SK, Manna B, Singh PN, Sarkar S, Naik TN, Chakrabarti S, Detels R. Transmission of HIV from injection drug users to their wives in India. *Int J STD AIDS* 2000;11:468-73.

130 Sosa-Estani S, Rossi D, Weissenbacher M. Epidemiology of human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome in injection drug users in Argentina: high seroprevalence of HIV infection. *Clin Infect Dis* 2003;37 Suppl 5:S338-42.

131 Rosengard C, Anderson B, Stein MD. Intravenous drug users' HIV-risk behaviors with primary/other partners. *Am J Drug Alcohol Use* 2004;30:225-36.

132 Bull SS, Piper P, Rietmeijer C. Men who have sex with men and also inject drugs-profiles of risk related to the synergy of sex and drug injection behaviors. *J Homosex* 2002;42:31-51.

133 Rhodes F, Deren S, Wood MM, Shedlin MG, Carlson RG, Lambert EY, Kochems LM, Stark MJ, Falck RS, Wright-DeAguero L, Weir B, Cottler L, Rourke KM, Trotter RT, 2nd. Understanding HIV risks of chronic drug-using men who have sex with men. *AIDS Care* 1999;11:629-48.

134 Archibald et al. In Preparation. Op. cit.

135 Diaz T, Vlahov D, Greenberg B, Cuevas Y, Garfein R. Sexual orientation and HIV infection prevalence among young Latino injection drug users in Harlem. *J Womens Health Gend Based Med* 2001;10:371-80.

indigenous, economically disadvantaged, engaged in the trade of sex for money or drugs, and to report having female sexual partners. Marginalisation of this group is compounded by HIV prevention and treatment services, which have a propensity to target either men who have sex with men or injecting drug users but not the intersection between these two groups.[136] In a study of injecting drug users in Montreal, men who had sex with other men were 2.5 times more likely than injectors who did not, to have HIV at study entry.[137]

3.3 Conclusions

Despite insufficiencies of data, particularly on non-injecting drug use, there is no doubt that the use of drugs, whether injected or taken otherwise, increases the risk of becoming infected with HIV. If injected, the use of contaminated injection equipment can lead to the rapid spread of the virus in the injecting community and beyond. Certain drugs that are not injected can also increase HIV transmission due to their impact on sexual risk-taking behaviour. The sexual partners of drug users, whether drugs users themselves or not, can spread the virus to the larger community, particularly if they are commercial sex workers.

Consequently, many researchers and analysts believe that the role of primary drug abuse prevention is widely underestimated and neglected for HIV/AIDS prevention. Also important are interventions to prevent non-injecting drug users from becoming injectors, and to encourage those who inject to consider non-injecting alternatives such as substitution treatment.

For example, in Eastern Europe and Central Asia, drug use starts at a very early age and traditional HIV prevention strategies addressing injecting drug use may not be appropriate. In countries of Latin America, where crack use is widespread, interventions addressing injecting drug use may miss the role this drug plays in the sexual transmission of HIV. In South and South-East Asia, we are currently witnessing a large epidemic of ATS use, but we know very little about how this will impact the HIV situation in the region. The number of injection drug users in China and India is on the increase, as are the HIV/AIDS rates among these drug users, which indicates that not enough is being done in primary and secondary drug use prevention. And even in the advanced HIV epidemics of Africa, increased drug use and injection drug use could diminish the impact of prevention campaigns aimed at sexual behaviour.

Worldwide, we are witnessing a feminization of the HIV/AIDS epidemics, meaning that the share of people living with HIV/AIDS who are women is steadily increasing. Unfortunately, there appears to be a parallel process among drug users. The number of female drug users, particularly of injecting drug users, is increasing in many parts of the world. Some of them are partners of male drug users, some are sex workers using drugs to cope with the strains of their profession. Interventions for female drug users face a number of dilemmas, because they are particularly hard-to-reach, highly stigmatized and extremely vulnerable to HIV infection. Interventions have been developed mainly for male injecting drug users, and these interventions do not take into account the particular needs and characteristics of female drug users. While there is increasing knowledge on what needs to be done, good intervention modalities have still not been developed and implemented on a sufficient scale. The information from this chapter, however, indicates that there is an urgent need to develop these interventions.

The message of this chapter is clear. Both injection and non-injection drug use need to be targeted in efforts to reduce the spread of HIV. To be able to do so effectively, more information on non-injection drug use and its implication for HIV transmission is needed urgently.

136 Choi KH, Coates TJ. Prevention of HIV infection. *Aids* 1994;8:1371-89.

137 Archibald et al. In Preparation. Op. cit.

4. TOWARDS THE CREATION OF AN ILLICIT DRUG INDEX

4. Towards the creation of an Illicit Drug Index

4.1 Introduction

International drug control is about a century old. The notion of a 'drug problem', as well as the will to tackle it, have thus gained a strong foothold in public opinion, government policy and multilateral cooperation. Yet, traditionally presented as a supply-demand issue, split between the three sectors of production, trafficking and consumption, and further broken down into various drug categories, the "drug problem" has so far not found a representation that goes beyond the existing mosaic of perceptions and statistics, and encompasses them into a single standard measure.

The resulting heterogeneity has made it difficult to establish benchmarks and to make straightforward comparisons of the drug problem across regions/countries and over time. One of several consequences has been, for instance, a difficulty in bridging the divide, established in public discourse, between producing and consuming countries. Another effect has been to limit possibilities of exploring correlations with other socio-economic indicators and indices. Of even more direct relevance to drug control, this absence of a suitable yardstick has perpetuated the difficulties of assessing the impact and effectiveness of drug control policies. For how should one decide if the drug problem is getting better or worse when, say, the number of abusers changes and abuse shifts from one substance to another? Or when production declines but consumption increases in a given region?

Indicators and indices are necessarily reductionist and cannot represent the whole truth. The loss in complexity they entail is commensurate with the degree of aggregation they require. The risk of distorting reality through oversimplification is further compounded by weaknesses in the underlying data on illicit drugs. Provided their drawbacks are clearly kept in mind, indicators and indices can nevertheless be useful, as reflected in their increasing presence in social sciences and policy. They contribute, in particular, to introducing more objective approaches in policy debate, in programme monitoring and in impact evaluation. They also help countries to assess their relative positions on a global scale and to better gauge the significance of the problem they face, or the overall progress they have made in any particular area.

Entrusted by Member States with the responsibility to promote and support a coordinated and multilateral response to the world's drug problem, UNODC has been striving to improve the analytical tools at the disposal of governments and the international community to develop increasingly effective control measures. In this context, it has been working with governments and a variety of organizations to establish norms and standard indicators; to improve data collection and reporting systems; and to facilitate the dissemination of data and information on the nature, extent and evolution of the drug problem and its various dimensions. As part of the ongoing effort to expand the knowledge base that informs policy making, UNODC is now working towards developing a global Illicit Drug Index (IDI) with a view to fill the gap identified above. To initiate the multifaceted discussions and efforts that such an undertaking will necessarily require, preliminary work was undertaken by a working group established in the Policy Analysis and Research Branch of UNODC.[1] The initial results of this work are presented in the following pages. They should be seen as work in progress and it

1 Members of the working group included the following individuals : Anna Alvazzi Del Fratte, Sandeep Chawla, Thibault le Pichon, Thomas Pietschmann, Barbara Remberg, Wolfgang Rhomberg, Howard Stead, Javier Teran and Melissa Tullis.

is hoped that they will generate the interest and the contributions that the further development of such a tool requires. The Index is intended primarily to establish values and enable comparisons at country level. At this early stage, however, results are only presented at the regional level and for the year 2002, as a way to illustrate the basic concept and methodology.

The purpose of an Illicit Drug Index

The objective is to create a single standard measure of the drug problem that would enable direct comparisons across regions/countries and over time.

The Illicit Drug Index would provide a single, standard and comparable measure of a country's overall drug problem, weighted by the size of its population.

4.1.2 Assumptions, choices and limitations

In the preparatory work undertaken thus far, a number of assumptions and choices were made and several limitations were identified. They apply to the preliminary version of the index presented here (referred to as 'the index' hereafter).

- The index is based solely on component drug indicators, and unlike many indices in other domains, does not rely on other socio-economic correlates. At this stage, this is seen rather as an advantage, since it enables a more direct measure of the drug problem. Moreover, too little research has been done so far to explore possible correlations between the drug problem and other socioeconomic dimensions. In the longer-term however, the inclusion of component indicators drawn from other domains could enrich the index and help to compensate for some of the many weaknesses of the illicit drug data set.
- The Index is a function of illicit drug production, trafficking and abuse and is therefore based on the combined extent of those three traditional sectors of the drug problem. It does not include other variables such as money laundering, corruption or drug related acquisitive crime. Apart from the issue of data availability, it was assumed that such problems tend to be closely related to the extent of drug production, trafficking and abuse in a given country. While this may be true in most cases, there are likely to be some exceptions, such as the laundering of drug money in an offshore centre, which may otherwise not be particularly affected by drug production, trafficking or abuse.
- Although illicit drugs can create a variety of related harms (violence, corruption, etc.), the potential harm to individual health was selected as central to drug control policies as a whole and thus established as a common denominator for the components of the IDI. This choice is necessarily limiting but finds clear support in the underlying philosophy of the drug control system: protecting public health by limiting potentially harmful psychoactive substances to medical and scientific use. The most fundamental reproach that a drug control agency will make to an illicit opium farmer is that he produces dangerous drugs that will endanger the health of other people. The fact that, in doing so, he also contributes to perpetuating an illicit market is considered, under the drug control system for which this index is established, as an important but secondary harm. The same reasoning applies to a drug trafficker with respect to, say, violence or corruption.
- Due to the many gaps and weaknesses in the data set used to calculate the index, additional caveats, over and above the ones usually associated with indicators and indices, must be made. While the results obtained thus far were considered encouraging and meaningful enough to be presented for further discussion, they should still be seen as very tentative and subject to revision.

Technical challenges

Any attempt to develop a global illicit drug index will necessarily face formidable technical challenges. If not, such an index would have been established a long time ago. Two main obstacles, in particular, need to be cleared at the outset.

- The substance boundary, created by the existence of various drug categories and related effects. How does one compare cocaine, cannabis or heroin?

- The sectorial boundary, resulting in the differing mix of production, trafficking and consumption found in any given region or country. How does one compare the production of a kilogram of opium by a farmer with its subsequent consumption (in the form of opium and/or heroin) by hundreds of consumers?

Technical solutions

- To remove the first stumbling block, the various drug categories were converted into a single hypothetical reference drug. As explained further

below, this was achieved by establishing the potential harm to health of each drug category[2] and by merging their measurement into a common scale.

The Illicit Drug Index combines all the main categories of illicit drugs by converting them into a hypothetical reference drug.

- The second obstacle, created by the difficulty of comparing production, trafficking and consumption, was removed by identifying the common element in the three main sectors and using it to establish a single measure for all three of them. One can indeed view production, trafficking and abuse as sequential steps in a market continuum along which illicit drugs are processed and moved. Using the reference drug and the harm factor mentioned above, activities in all three sectors can then be defined as the act of processing/moving a certain amount of potential harm associated with a given quantity of the reference drug along the market chain. In other words, what the opium farmer, the drug trafficker and the drug addict have in common is that they are all handling a certain amount of potential harm to the health of individuals and contributing to actualising that potential. That harm is associated with the quantity of drugs (converted into the reference drug) they are moving along the supply-demand chain. As noted above, while there are several other forms of harm associated with illicit drugs (violence, corruption, etc.), at this stage, potential harm to health was chosen as the central unifying factor.

The Illicit Drug Index combines the extent of illicit drug production, trafficking and abuse into a single measure of potential harm that moves along the market chain.

The Illicit Drug Index thus attempts to capture all the main dimensions of the drug problem into a single measure. This measure, in turn, can be disaggregated into its various component indicators, thus allowing for a more specific representation of, say, a country's drug problem in terms of production, trafficking or abuse for all substances combined, or in terms of a particular substance for all three sectors combined.

The size of a country's population is taken into account in the calculation of the IDI, which is therefore based on a value per capita. The preliminary version of this index is based on more than 4800 data records for the year 2002, provided by Member States to UNODC and covering 177 countries and territories. An average of 27 data records per country have thus been used to generate this version of the index. As noted earlier, results presented below are aggregated at the regional level.

The Illicit Drug Index reflects the extent of the drug problem affecting a particular country in comparison with others, weighted by the size of its population.

4.2 Methodology

The IDI is a composite of three sub-indices which reflect the situation of a country in terms of drug production, drug trafficking and drug abuse.

4.2.1 Main components of the index

Illicit drug production sub-index

Production is calculated in terms of the quantity of illicit drugs produced in a country. For the main plant based drugs, the estimates are generally based on surveys of the area under cultivation, yields and the typical transformation rates for the conversion of the psychoactive plant products (opium, coca leaf) into the respective end products (heroin or cocaine).

In the case of cannabis, Member States' estimates of areas under cannabis cultivation and yields were used. Given the lack of scientific surveys for most countries, the overall reliability of these estimates is much lower than in the case of heroin or cocaine.

Establishing estimates for synthetic drugs, such as amphetamines (methamphetamine and amphetamine) or ecstasy, is a far more challenging task. For such drugs, UNODC has developed a triangulation approach, which involves the following elements:

a) estimates based on the number of consumers and the typical amounts consumed per user;
b) estimates based on seizures of end products; and
c) estimates based on seizures of precursors.

The average of the three estimates was used as UNODC's global production estimate for amphetamines and ecstasy. In the next step, the global production estimate was allocated to countries, based on Member States' information on source countries identified, laboratory seizures, and drug seizures. The resulting estimates are necessarily only indicative of likely levels of production.

2 Namely: opiates, cocaine, cannabis (herb and resin), amphetamines and ecstasy. These drugs account for the bulk of the drug problem worldwide. Production, trafficking and abuse of other drugs were disregarded as they would hardly change the overall index.

The results in weight equivalents were then transformed into typical consumption units ('doses'), reflecting the fact that a typical 'dose' of cannabis herb (around 0.5 grams), for instance, is larger than a typical dose of cocaine (around 0.1 grams), ecstasy (0.1 grams), heroin (around 0.03 grams) or amphetamines (0.03 grams)[3].

Even transformed into typical drug doses, the results could still be misleading, as some drugs are known to have a higher abuse risk and associated harm than others. Compared with other illicit drugs, opiates, for instance, have a consistently worse record in terms of treatment demand, spread of blood-born diseases such as HIV-AIDS and drug related deaths. Thus, the total number of doses produced in a country were weighted by a 'harm/risk factor' (see below for details on the harm/risk factor), which gives, for instance, a higher weight to opiates than to cannabis.

Illicit drug trafficking sub-index

Measuring illicit drug trafficking is notoriously difficult and can only be done through indirect indicators. For the purposes of this model, the establishment of the illicit drug trafficking sub-index relied on the combination of two indicators:

a) Reported illicit drug seizures ('seizure indicator')

b) Reported illicit drug seizures routes ('route indi cator')

a) Seizure indicator

The first component of the illicit drug trafficking sub-index is the quantities of drugs seized by law enforcement services in a country, transformed into typical doses and then weighted by the harm factor (see below).

Seizure records offer one of the most developed global datasets on illicit drugs and therefore present considerable value for monitoring the evolution of the trafficking problem over time. If law enforcement capabilities were identical across the world, seizures could be a good proxy for assessing the extent of drug trafficking activities. This, however, is clearly not the case. The level of resources allocated and the priority given to controlling drug trafficking varies significantly from country to country. Seizures may therefore reflect as much the importance of the problem as the extent of the effort to tackle it, with no straightforward way of assessing the potential bias thus introduced in the measure of the actual volume of trafficking. The seizure indicator therefore needs to be complemented with another source of information.

b) Route indicator

The second component of the trafficking sub-index is itself composed of three elements, or sub-indicators:

(i) countries identified by reporting countries as main origins of drug shipments,
(ii) countries identified as main transit countries and
(iii) countries identified as main destination countries.

As part of UNODC's Annual Reports Questionnaire, Member States report the place of origin, transit and destination of drugs seized on their territory. 'Origin' in this context does not necessarily mean the source country of the drugs, but the country from which drug traffickers arrested in the reporting country typically obtained the drugs. The three sub-elements – origin, transit and destination countries – were then aggregated into a 'route indicator'.

If several countries identified a specific country as a country of origin, transit, or destination, it is likely that such a country is afflicted with significant levels of drug trafficking activities (even if itself made, or reported, no drug seizures, or only few of them).

Such reports do not, however, provide any information on the actual volume of trafficking from, through, or to, a given country. This creates a technical difficulty. Should the information provided by a country with a small drug abuse population and located far away from major drug trafficking routes be given the same weight as the information provided by a country with a large drug market? Probably not, as overall trafficking to a country with a small market is most likely significantly less than trafficking to a country with a big market. The size of the population is not necessarily an appropriate weighting factor in this case. For instance, information on the origin or the transit of cocaine reported by countries such as India or China – which have very limited cocaine consumption, but very large populations – would have more weight than reports from the USA, the world's largest cocaine market.

The information on the origin, transit and destination of drugs was therefore weighted by the quantities of drugs seized in the reporting country. As a consequence, information provided by the USA or Colombia (the two countries reporting the highest cocaine seizures worldwide) on the origin, transit and destination of cocaine is given more weight than cocaine related information

3 These typical doses, derived from scientific literature, INCB and DEA reports, have traditionally been used by UNODC to convert drug units reported into weight equivalents, and vice-versa.

provided by other countries; similarly, information on the origin, transit and destination provided by Iran, Pakistan and China on opiates (which report the largest opiate seizures worldwide), or by Thailand and China on amphetamines (reporting the largest methamphetamine seizures worldwide) is given more weight than information provided by other countries.

The sub-components (origin, transit destination) of the 'route indicator' were established as follows: the breakdown of the countries of origin (or transit, or destination), as reported by Member States, was used to 'allocate' the seizures made by the reporting countries to the countries of origin, transit and destination (e.g. country A 50%, country B 30%, country C 20%). If the reporting country did not provide a breakdown (and no additional information was available), seizures made in that country were distributed equally among the origin, transit or destination countries reported.

The seizures were then transformed into standard drug doses and multiplied with the harm/risk-factor. The scores of countries were then aggregated to establish the second component of the trafficking sub-index.

This method for 're-allocating' seizures of reporting countries to 'countries of origin', 'transit countries or 'destination countries' thus provided an alternative way of assessing trafficking flows. With such an indicator, decreasing seizures in a given country would not necessarily lower that country's position on the international trafficking scale. All things being equal, reduced law enforcement successes against drug trafficking in a given country may lead to increased trafficking flows (and seizures) in neighbouring countries. These countries would, in turn, be as or even more likely than before to identify that particular country as origin or transit area.

One could theoretically consider using the route indicator to replace the seizure indicator altogether. One limitation, however, is related to the consistency of the data. Unfortunately, not all countries provide reports on the origin, transit and destination of drugs, which introduces a potential bias. A second limitation comes from the varying degree to which countries are affected by international drug trafficking as opposed to local drug trafficking. Some countries which are not, or marginally, used as origin or transit countries, but which make significant seizures, will get a low score under the 'route indicator'. The 'route indicator' is thus a powerful tool for detecting trafficking hubs, but the seizure indicator provides an important complement for estimating the level of drug trafficking activities at the national level.

Further steps in the development of the illicit drug index model will include a critical review of the shortcomings of the trafficking index. It is clear that the current version presents a number of weaknesses and can only provide a rough approximation of trafficking volumes. One alternative – which would require substantial research efforts – would be to develop global trafficking flow models for the various drugs, estimating for each country the amounts of drugs entering and leaving the country, taking into account trafficking routes, domestic production, consumption and seizures. Such models would potentially offer a better reflection of the actual quantities of drugs trafficked via various countries. At the same time, however, such models may be less effective in identifying trafficking hot-spots, where drugs change hands among the various criminal groups involved in drug trafficking (and which are thus particularly vulnerable to all of the negative side-effects resulting from drug trafficking).

Abuse sub-index

The method chosen to calculate the abuse index is relatively straightforward. Abuse is measured by the number of people using drugs (based on annual prevalence estimates, established for UNODC's World Drug report), multiplied with an average annual dose per drug and the harm/risk factor.

In order to arrive at such an average annual dose, global production for each drug less seizures (adjusted for purity) was calculated over a 10-year period and divided by the average number of users over this period. This approach was used as a way to mitigate the effects of stocks and time lags along the supply-demand chain, because of which total production and total consumption are not necessarily identical in any specific year. Over longer periods of time, one can assume that stock movements even out and have a neutral effect on the system. This approach – average annual production less average annual purity-adjusted seizures – should thus give a reasonable order of magnitude of average annual drug availability for consumption. This result was then divided by the average number of users over the 10 year period in order to arrive at an average annual amount per user, which was in turn multiplied by the number of drug users to arrive at an estimation of the amount of illicit drugs consumed in a country. The result in kilograms per country was then transformed into typical doses and multiplied with the harm/risk factor in order to make the different drugs comparable.

4.2.2 Aggregating information

Harm/risk factor

One innovative approach in the model proposed for the calculation of an Illicit Drug Index was the establishment of a 'harm/risk factor' for drugs. This allows for aggregating results from different drugs into one single hypothetical reference drug.

Drugs inflict a large number of harms to the individual as well as to society at large. The approach used for the purposes of this model was to concentrate on the health consequences of drug abuse. Thus, the harm-factor used in this model does not include broader societal consequences, such as substance specific differences in the level of drug related violence, corruption, acquisitive crime, organized crime, financing of terrorist groups, etc. Such a broader concept of drug related harm to society in all its manifestations could be envisaged for future development phases of this model. For the time being, most of the data necessary to establish such a broader concept of drug related harm, on a global scale, are not available.

Even focussing on the health consequences of drug abuse does not yield easy answers, given the complex nature of drugs and their interactions with the human body. The consequences of drug abuse differ substantially depending on the drugs used (lung cancer versus brain stroke, cardiac versus renal failure, etc.), making direct comparisons extremely difficult. Thus a common measure for the medical risks and consequences of drug abuse had to be identified.

Following an in-depth review of data currently available in the scientific literature and at UNODC, the following elements were selected to establish the risks and harm related to substance abuse:

- treatment demand (per 1000 drug users), injecting drug use (per drug category) to reflect the risk of diseases such as hepatitis B, hepatitis C or HIV/AIDS,
- toxicity (typical/recreational versus lethal dose); and
- drug related deaths (per 1000 users).

The first key indicator on the consequences of drug abuse is treatment demand. One can assume that that the more serious the drug problem for an individual, the more likely drug addicts will seek professional help. In order to be used as a risk measure, treatment demand must be put against the number of people consuming such drugs. Thus one component for the establishment of a composite harm/risk factor is 'treatment demand' generated by substance abuse, compared to the total number of people using such drugs. Based on treatment demand data provided by 123 countries, and UNODC estimates of the number of people using illicit drugs, it was calculated that an average of 78 people per 1000 users of opiates undergo treatment. This is more than the corresponding rates for cocaine (66 per 1000 users), amphetamines (16) or cannabis (7).

Another indicator for the risks of drug abuse is linked to the route of administration, notably injecting drug use (IDU). It is commonly acknowledged that IDU is a highly problematic route of administration, potentially leading to hepatitis B, hepatitis C or HIV/AIDS infections when injecting equipment is shared among drug users. Information provided by 36 Member States to UNODC shows that opiates have the highest probability of being injected, followed by amphetamines (methamphetamine and then amphetamine), cocaine and ecstasy. Injecting has not been reported for cannabis use. In combination with other risk factors, the IDU indicator thus integrates one key dimension in the harm/risk factor – the risk of the spread of blood borne diseases, which is a serious concern in many countries around the world.

A further risk factor, the toxicity, was used to measure the 'relative safety' of drugs. This provides information on the likelihood of an overdose, as a result of users' mistakes and/or changes in drug purity levels. This factor is based on two sub-indices, the dose index and the toxicology index.

One way of measuring the relative 'safety' of a drug is to consider the ratio (*Dose Index*) between a typical dose and a lethal dose. Such an index (comparing the effective dose (ED50) with the lethal dose (LD50)) is used routinely in clinical pharmacology as a measure of the safety of a drug. The ED50 is defined as the estimated dose required to produce a specified effect in half of a particular population. For this model, the typical 'dose' for each of the drugs (divided by 70 kg for an average adult) is used as the ED50. The LD50 is a measure of the dose which kills half of the experimental animals to whom a particular drug is administered. A comparison of the two suggests, for instance, that ecstasy is more dangerous than cannabis, though less dangerous than other drugs. The comparison of doses for animals with those for human beings, however, has some limitations and results must be interpreted with caution.

Another level of analysis was based on concentration levels of drugs or drug metabolites in the blood of people who died from overdose. Results were then compared with concentration levels in persons who had been given drugs for therapeutic use (*Toxicology Index*).

This index shows, as one would expect, that the greatest risk of dying from an overdose is associated with opiates (already at five times the concentration levels resulting from a therapeutic dose) whereas cannabis has the lowest risk of acute drug related death.

Combining the results of the two sub-indices, a new '*toxicity index*' was established. This index suggests that the highest risks of accidental death from a drug overdose is associated with the abuse of opiates, followed by cocaine, amphetamines and ecstasy.

Finally, the actual risk of dying from drugs was established by analysing data supplied by Member States on the number of people reported to have died in connection with the use of specific drugs, as compared to the total number of people using such drugs (drug death index). This analysis – based on information from 20 countries – suggests that, on average, out of 100,000 opiate users, 261 users die in a year (0.3%), far more than the corresponding rates for cocaine (48), amphetamines (18), or ecstasy (3).

The overall 'risk/harm factor', used for the calculations in the Illicit Drug Index model, was established by pooling the results of the four components discussed above. The risks arising from the use of opiates was set at 100 and the average of the four sub-indices was calculated. The four components of the harm/risk factor were given equal weight. The results suggest that the highest risks from a typical dose are associated with opiates, followed by cocaine, amphetamine and ecstasy.

4.2.3 Aggregating the individual components of the Illicit Drug Index and preliminary results

The Illicit Drug Index, as described above, consists of three components: production, trafficking and abuse. In order to arrive at the overall Illicit Drug Index, the various components have to be combined.

The individual scores of production (production in kilograms converted into typical consumption units and multiplied by the harm factor) and consumption (number of drug users multiplied by an average annual dose, converted into typical consumption units and multiplied by the harm factor) can be directly aggregated. The results, in each case, can be interpreted as total production or total consumption of the hypothetical reference drug expressed in typical drug doses.

The aggregation of the trafficking sub-index with the other two components was more complicated and an additional calculation had to be introduced. As drugs are usually moved from the place of production to the place of consumption, the overall amounts of drugs trafficked are basically equivalent to global drug production, less seizures.[4] Thus, for the purposes of this model, seizures (transformed into doses and multiplied by the harm factor) were subtracted from global drug production (transformed into doses and multiplied by the harm factor) to calculate the global drug trafficking scores. The distribution pattern resulting from the trafficking sub-index was then used to distribute 'total drug trafficking' (production less seizures) among countries. As indicated earlier, this current version of the illicit trafficking sub-index, could be improved in the future by an index derived from detailed trafficking flow models (which remain to be developed).

The preliminary results fo the calculations described above suggest that the world's drug problem continues to be primarily associated with production, trafficking and abuse of opiates (56%), followed by cocaine (22%), cannabis (12%) and ATS (10%).

The next two graphs suggest that, on a per capita basis, the Near & Middle East/South-West Asia is the subregion which is most severely affected by the drug problem. It has the highest drug production problem, the largest trafficking problem and suffers from significant levels of drug abuse. The drug problem of this subregion is mainly linked to opiates. The second region most affected by the drug problem is South America. The main problems there are again drug production, followed by trafficking and, to a lesser extent, drug abuse, with the problem mainly linked to cocaine. In the case of North America, the third most affected region by drugs, the main problem is drug abuse, followed by trafficking and drug production. The problems in North America are primarily linked to cocaine, though opiates, ATS and cannabis also play a role.

The extent of the drug problem in the Oceania region is above the global average while the drug problem in

4 This, is, of course, a considerable simplification of reality: (i) The relationship assumes a basically stable drug market. In case of large increases or decreases in production, or the existence of large movements of stocks, the relationship would not hold; (ii) Tthe assumption that the total drug flow is equivalent to production less seizures, does not take into account the actual location of seizures. If seizures took place exclusively in consumer countries, the total trafficking flows would be larger than predicted by the model. In reality, however, significant amounts of drugs are seized in and around the producer countries so the actual potential error should not be too significant; (iii) Subtracting reported seizures may not be entirely appropriate as, along the trafficking route, drugs are usually 'cut' or diluted. Actual seizures in pure drug equivalents should be thus less. However, there are also losses along the trafficking routes. In other words, the two biases may actually offset each other. In short, while this model, assuming that 'production less seizures' equals trafficking flows, can, of course, deviate from reality, it seems to be - as long as there is no dramatic change in the market – an acceptable approximation of reality.

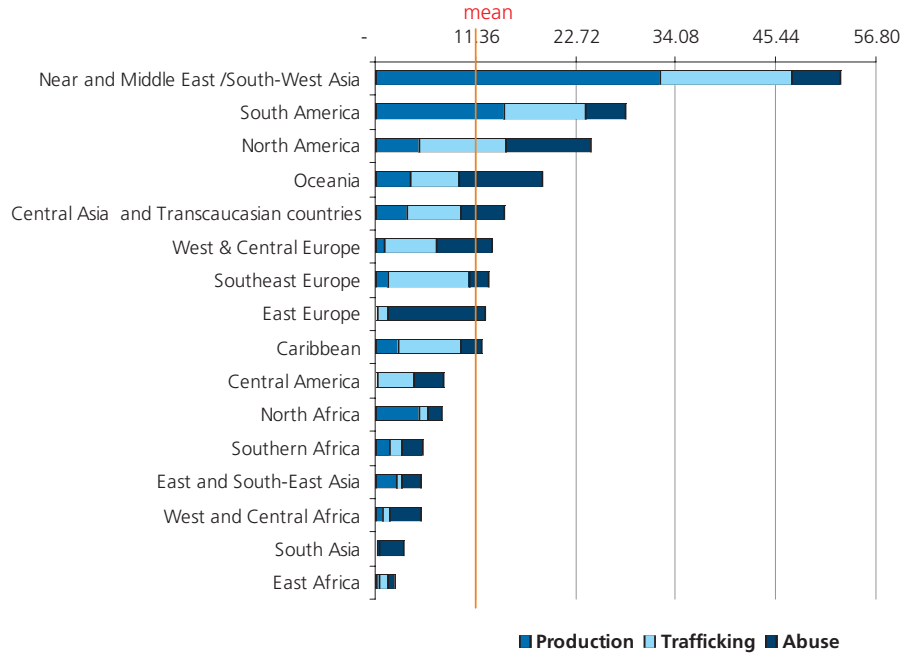
Europe is close to the global average. The drug problem in West & Central Europe as well as in East Europe is mainly linked to abuse, while in South-East Europe (covering Turkey and the Balkan countries) it is primarily linked to trafficking. While a number of substances are present in the drug markets of West and Central Europe, the main problem is related to the abuse of opiates.

The drug problem in Africa and Asia (except the Near and Middle East/South-West Asia) is relatively low, on a per capita basis. The main problems of production in these two regions are encountered in North Africa, in Central Asia and in East & South-East Asia. In North Africa cannabis constitutes the main problem. The main drug problem for Central Asia and East & South-East Asia is linked to opiates.

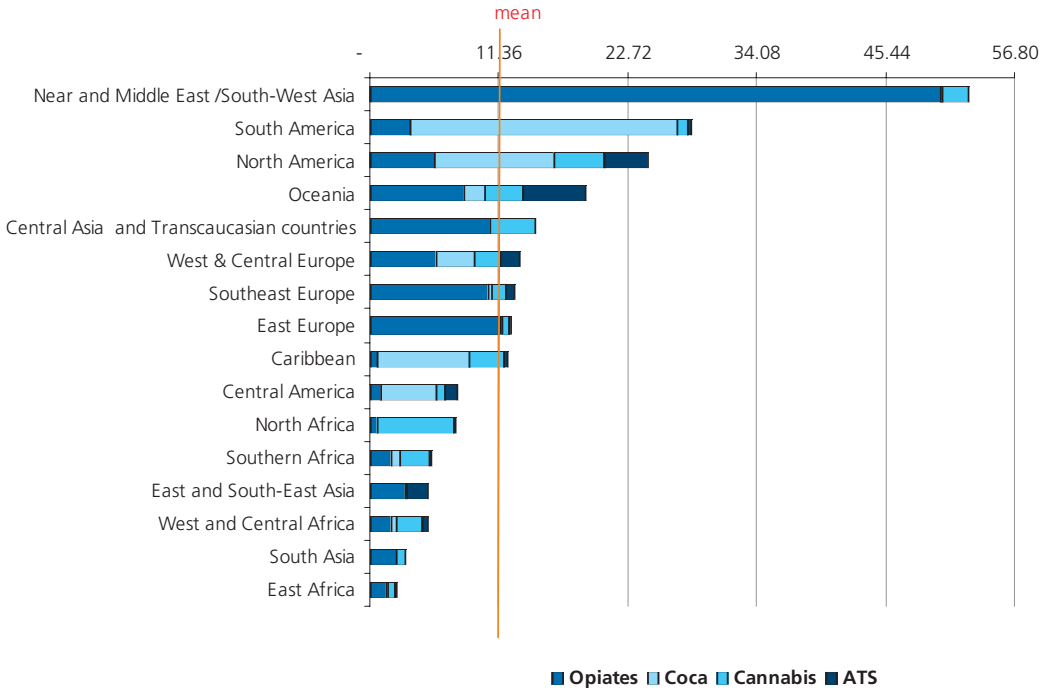
The results presented here are shown at the sub-regional level for illustrative purposes. They could provide a simple way to identify the extent of a country's drug problem as well as its patterns and – once calculated for a number of years – its evolution. The main idea of the IDI is to provide Member States with a comparable measure of the extent and the evolution of the drug problem, which should also improve the targeting of assistance by the international community. This, in turn will increase the efficacy of technical assistance programming and facilitate progress towards the ambitious goals set out in the 1998 Special Session of the General Assembly (UNGASS).

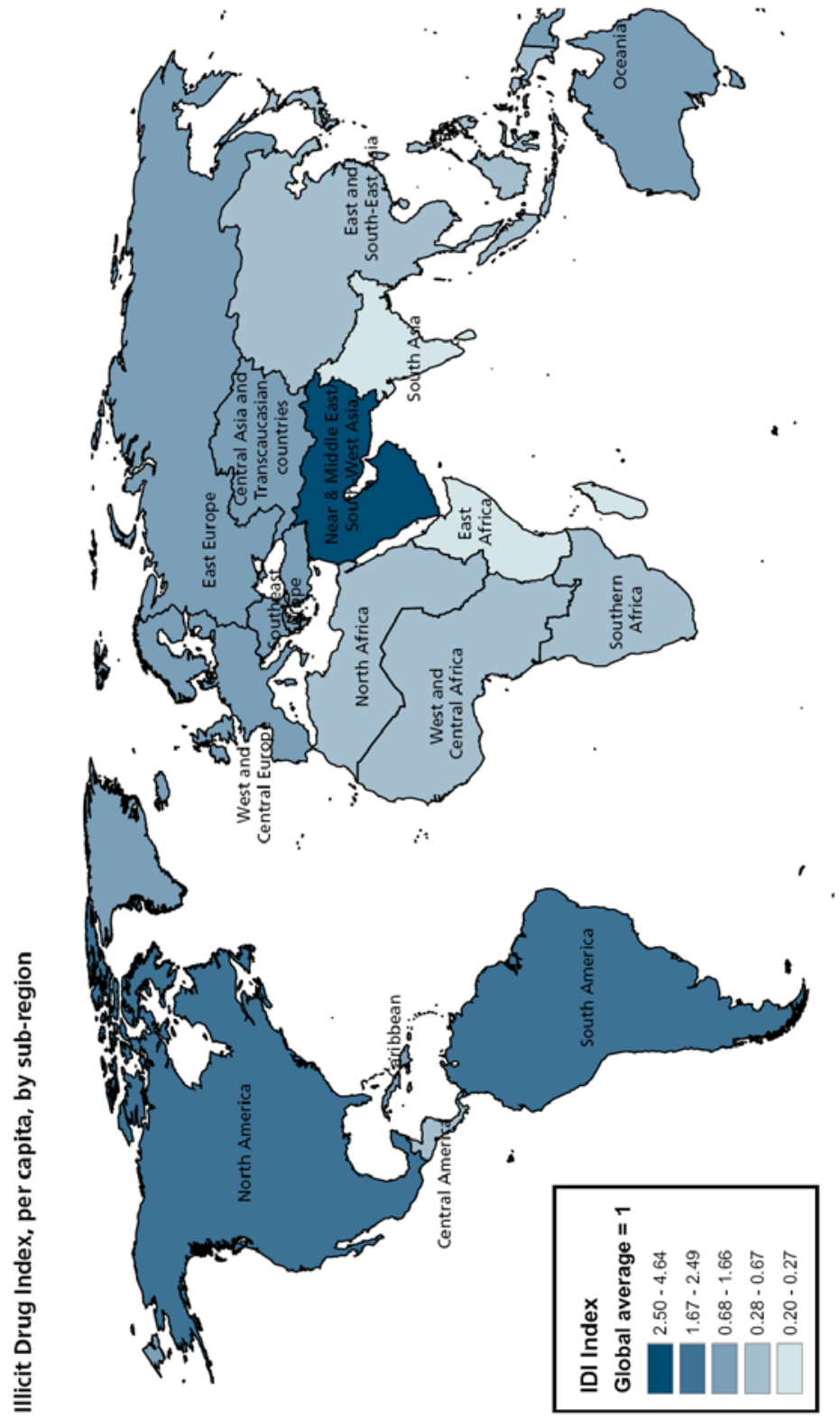
	Per capita values			
Sub-region	**Production**	**Trafficking**	**Abuse**	**IDI**
Caribbean	2.46	7.21	2.39	12.06
Central America	0.25	4.04	3.32	7.62
Central Asia and Transcaucasian countries	3.53	6.07	4.96	14.56
East Africa	0.30	1.13	0.80	2.23
East and South-East Asia	2.40	0.60	2.09	5.09
East Europe	0.15	1.26	10.96	12.38
Near and Middle East /South-West Asia	32.24	14.95	5.48	52.67
North Africa	4.85	1.12	1.54	7.51
North America	4.98	9.79	9.63	24.40
Oceania	3.87	5.56	9.42	18.86
South America	14.46	9.31	4.49	28.26
South Asia	0.28	0.10	2.68	3.06
Southeast Europe	1.40	9.19	2.15	12.75
Southern Africa	1.52	1.45	2.35	5.32
West & Central Europe	1.07	5.80	6.23	13.10
West and Central Africa	0.82	0.73	3.49	5.03
Mean	**4.33**	**3.26**	**3.77**	**11.36**

Illicit Drug Index, per capita, by Sub-region and Component, 2002



Illicit Drugs Index, per capita, by Sub-region and Drug-category, 2002




Illicit Drug Index, per capita, by sub-region
IDI Index
Global average = 1
2.50 - 4.64
1.67 - 2.49
0.68 - 1.66
0.28 - 0.67
0.20 - 0.27
North America
Caribbean
Central America
South America
West and Central Europe
East Europe
Southeast Europe
Central Asia and Transcaucasian countries
Near & Middle East/ South West Asia
North Africa
West and Central Africa
East Africa
Southern Africa
South Asia
East and South-East Asia
Oceania

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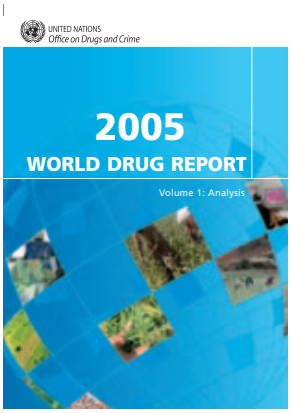

The negative impacts of the illicit drug trade touch every society in the world. This year's World Drug Report estimates that 200 million people, or 5% of the global population age 15-64, have consumed illicit drugs at least once in the last 12 months. The drug trade is pernicious and large. UNODC estimates its retail value at US$ 321bn. It impacts almost every level of human security from individual health, to safety and social welfare. Its consequences are especially devastating for countries with limited resources available to fight against it.

The World Drug Report 2005 provides one of the most comprehensive overviews of illicit drug trends at the international level. In addition, this year it presents the work of UNODC in two new areas of research. Both aim to provide tools to enrich our understanding of an immensely complex situation: an estimate of the financial value of the world drug market, and the preliminary steps towards the creation of an illicit drug index. The analysis of trends, some going back 10 years or more, is presented in Volume 1. Detailed statistics are presented in Volume 2. Taken together these volumes provide the most up to date view of today's illicit drug situation.

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